# You Till ACs

Notes:

This aff was one of our main affs during the later half of the Jan/Feb topic. There were several versions of it, but most of the versions remained unbroken.

The pluralism version was intended to be read with a short framework that said multiple things were valuable and didn’t defend a comprehensive ethical theory, but after thinking it through more we realized that wasn’t a great idea and stuck to reading only the util or oppression versions of the aff.

The plan basically shifts from an industrial agriculture model to an organic agriculture model. People thought it wasn’t very topical, but the T cards were really good.

# Whole Rez

## 1ACs

### 1AC Util Whole

#### The global model of industrial agriculture has massive over-reliance on fossil fuels – this causes warming and oil shortages, and means peak oil guarantees total collapse within 40 years

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

Recently, there has been much speculation about the causes of higher oil prices, and continuing dis- cussion about the likelihood of whether or not prices will continue to rise. Commentary has focused on the war in Iraq and accompanying geopolitical instability in the Middle East; increasing dependence on Russia; governments in Latin American nationalizing their oil industries; and supply chain bottle necks such as refining capacity. However, the geological constraints on future energy supply, known as peak oil—the point at which oil production stops rising and begins an inevitable long-term decline—have received much less atten- tion. As noted in Fuelling A Food Crisis: The Impact of Peak Oil on Food Security: While the majority of constraints on access to oil could potentially be overcome through political or economic means, the geological reality of ever dwindling fossil-fuel supplies is non-negotiable. While it has taken 145 years to consume half of the 2-2.5 trillion barrels of conventional oil sup- plies generally regarded as the total available, it is likely that, given the huge increases of demand from China and India in particular, the other half will be largely consumed within the next 40 years. Some 98 percent of global crude oil comes from 45 nations, over half of which may already have peaked in oil production, including seven of the 11 OPEC nations. Major oil field discoveries fell to zero for the first time in 2003, while the excess capacity held by OPEC nations has dwindled, from an average of 30 percent to about 1 percent of global demand today. World oil and gas production is declining at an average of 4-6 percent a year, while demand is growing at 2-3 percent a year.2 Ironically, the present system of industrial agriculture is a major contributor to these problems. Agriculture is responsible for an estimated one-third of emissions that contribute to global warming and climate change. It is generally agreed that about 25 percent of the main greenhouse gas—carbon dioxide—is produced by agricultural pesticides and chemicals, and via deforestation and the burning of bio- mass. Most of the methane in the atmosphere comes from domestic ruminants, forest fires, wetland rice cultivation and waste products, while conventional tillage and fertilizer use account for 70 percent of the nitrous oxides.3 This set of conditions is rapidly destroying our shared heritage called the “commons”—that is, the planet’s natural resources necessary to grow food. And, although the revenge of nature itself may eventually force the end of the current global industrial agriculture model, the cost will most certainly be the destruction of millions of livelihoods and lives, scarce food supplies, and devastation to the planet’s natural systems. Given the potential for such catastrophe, it is critical to quickly restore and enhance food and fiber systems that are more regionally based, and that respect societies, cultures, and nature. GROWING FOOD ONCE EXPRESSED a “personal” relationship between human beings, wildlife and the earth. Successful farming was based on generations of accumulated knowledge about place: climate, land, water, soil and the organisms within it; mixing and rotating crops, seed saving, breeding, and recy- cling organic matter. Growing food was an intimate process; it involved farmer, land, and community, with the goal of sustaining that life-giving exchange in perpetuity. At the heart of the matter: a deep love of the land. Over the past several centuries, most food has primarily been grown locally for local community and family consumption. Until very recently, developing countries grew 90 percent of the food they con- sumed domestically and for small local markets.1 Over the centuries, local farmers developed seeds and used them collectively as a community to re-plant for the next harvest. They invented a variety of cultiva- tion methods, crops, and pest management systems that were unique to local ecosystems and cultures. Communities freely shared all local “commons”—water, labor, seeds, traditional knowledge and innova- tion—that were vital to food cultivation and the survival of stable communities. Natural resources were carefully nurtured to maintain an important balance between regional fish, fowl, and other wild creatures, and the needs of the community. As one United Nations Environment Program (UNEP) report observed: “In India, peasants grow over forty different crops on localities that have been cultivated for more than two thousand years without a drop in yields, yet have remained free of pests.”2 The report also attested to the benefits of agro-ecologi- cal approaches over millennia, citing practices of indigenous populations that are “based on ecological knowledge and understanding” and are “highly efficient and productive and inherently sustainable.” Cultures have successfully adapted to difficult environments with innovative techniques for irrigation, drainage, soil fertility, frost control, and disease management. In Central America, for example, ingenious raised-bed systems known variously as chiampas, waru waru, or tablones have withstood truly terrible geo- logical conditions and have successfully fed populations without ecological damage. Similarly, highly evolved, locally appropriate systems are found in Africa, the Andes region, South Asia, and many other places. All of these successful adaptations resulted from farmers’ intimate relations with the land, weather conditions, and unique local conditions. In this way, people fed themselves for millennia. Local, decentralized food production still provides millions of livelihoods around the world and pro- vides fresh, nutritious food direct from the land to the table without the stresses and expenses of long distance shipping. India’s wheat economy is a good example of this. Millions of Indian farmers grow over 6 billion tons of wheat per year. Leading food rights advocate Dr. Vandana Shiva explains the process in the IFG book Views From the South: A chain of traders (artis), bring wheat directly from the farm to the local shops. Most people buy fresh wheat from the local corner store (kirana) and then take it to the local mill operators (chakki wallas). It is estimated that over 2 million small neighborhood mills produce fresh flour. Additionally, flour is produced by women working in households. Shiva observes: “Less than 1 percent of flour carries a brand name because Indian consumers trust their own supervision of quality at the local mill better than a brand name attached to stale, packaged flour.” Small-scale, local food economies have successfully sustained millions of people for many centuries with little capital investment and infrastructure. Rather than technology and investment capital, people and natural resources (“natural capital”) are at the center of this system. Additionally, these centuries-old knowledge systems begat amazing food diversity. Traditional cultures enjoyed beautiful varieties of rice, potatoes, beans, corn, and other foods. Indeed, cultures were created and defined by the diversity of their foods. Annual festivals and seasonal celebrations of planting and harvesting helped ensure that the culture was imbued with nature-based practices over the centuries. radical shift to corporate control During the last century, a radical new approach to agriculture emerged. Instead of local farmers growing food locally for their own communities, a new highly centralized, global system of industrialized agricul- ture rapidly began replacing the local, decentralized small-scale food systems connected to traditional cul- tures, climates, geography, ecosystems, and other endemic factors. This model now represents the dominant paradigm for industrial, northern countries. Beginning with the Green Revolution, many developing countries began to adopt industrial agriculture practices as well. This industrial regime of the last few decades is characterized by excessive focus on the import and export of food, and is promoted and enforced by international institutions and agreements such as the World Bank, the International Monetary Fund (IMF), the World Trade Organization (WTO) and other regional and bilateral trade and investment agreements. Unlike the agreements of other international bureaucracies, such as those of the United Nations, the WTO’s agreements are legally binding and have strong enforcement capability. Thus, they have become the most important vehicles for implementing economic and also social policies across the world. Though the rules and policies of recent global agreements and institutions are negotiated between governments, they are largely crafted by large agribusiness corporations—the primary beneficiaries. A salient feature of these agreements is that food is treated as a commodity rather than as crucial for the survival of all humans. Given that food is a basic necessity of life, unlike other commodities such as tires or computers, many governments and civil society movements believe that such policies are griev- ously misguided. As Lori Wallach of Public Citizen puts it, “Food—like water—is not an optional prod- uct that consumers may choose to purchase: food is the basis of life. People without food die, while people without cars or tires walk and people without tin ore use local materials.”3 As such, many believe that governments have an obligation to ensure food as a basic human right. The result of this shift has been a loss of livelihoods for millions of farmers, and the depression of rural communities; an increase in hunger in many parts of the globe; compromised nutrition and safety of food; increased environmental destruction; and the control of food production and distribution by an ever-smaller number of giant global agribusinesses. (See Box 1.) These are some of the outcomes of this shift: ❖ Local self-reliant food systems that had provided food and livelihoods for millions, and a secure food supply, are rapidly being replaced by corporate control—often foreign corporations—over farm inputs, energy, crop commodity prices, food production, and marketing. These corporations value profits and export trade over the needs of local communities for food and sustainable products. ❖ Industrial agriculture eliminates diverse food production for local needs, replacing it with large scale monocultural production of one or two crops appropriate for export markets; thus, diminishing natural biodiversity—of micro organisms, plants, insects, and animals, and diminishing local food supply as well. ❖ Heavy use of industrial agricultural processes, including pesticides, chemical fertilizers and fossil fuel-based machinery are rapidly destroying the vitality of the soil, polluting and over-using scarce fresh water, polluting the air, and harming wildlife and humans. ❖ The corporate introduction of genetically modified organisms (GMOs) and plants further destroys biodiversity and brings unknown, potentially catastrophic dangers via new forms of biopollution. ❖ The export driven model of globalized agriculture requires a huge increase in transport infrastruc- tures —roads, ports, airports, energy grids—often constructed at the expense of nature and in defiance of global energy shortages. ❖ Massive shipments of agricultural commodities across great distances requires additional fossil fuel usage, refrigeration, packaging, etc. and fosters mobility of exotic plant and animal species, and the spread of pests, viruses, bacteria, and disease. ❖ Control over and accesstothe mostessential elements of life—thecommons—arebeingstrippedaway from local communities and given over to corporations (often via World Bank privatization schemes). ❖ Traditional knowledge of seeds, plants, and cultivation are being expropriated for profit, and patented by large corporations—a process known as “biopiracy.” ❖ Agriculture accounts for approximately 25 percent of carbon dioxide emissions; and 70 percent of nitrous oxide emissions.4 global macro effects The expansion of the industrial agriculture model affects everyone, whether they live in cities, suburban America, or the countryside in the global South or North. To illustrate, we offer examples below on how globalized industrial agriculture relates to two of the most pressing issues of our time: immigration and global warming. –9– part one The Roots of Migration The issue of immigration has dozens of countries in serious turmoil. The U.S. is no exception. Here, the raging debate about immigration is largely the result of globalized industrial agriculture, and trade agree- ments that embrace this model. Between 1990 and 2005, the number of migrants from Mexico and Central America living in the U.S. without authorization spiked from 2 million to an estimated 6.2 million. Many of these migrants could be called “NAFTA refugees.” The North American Free Trade Agreement (NAFTA), which went into effect in 1994, lifted barriers to “free” agricultural trade between North and South, with dire consequences. As part of the condition for joining NAFTA, Mexico was required to drastically change its Constitution and abandon the traditional ejido system of communal land and resource ownership. This is the system created after the Mexican Revolution of the early 20th century that made traditional farming in Mexico productive and viable. Mexico was also forced to dismantle a system that had provided a guaranteed floor price for corn for Mexican farmers, which had sustained over 3 million corn producers. As a result of NAFTA, Mexican farmers suddenly found themselves competing with an influx of cheap agricultural commodities produced by large-scale, heavily subsidized U.S. producers. Corn imports from the North grew 17-fold between 1993 and 2001 and accounted for 25 percent of Mexican corn consumption. This compared to a pre-NAFTA figure of 2 percent.5 Within a year of NAFTA’s passage, Mexican production of corn and other basic grains fell by 50 percent, and millions of peasant farmers lost a significant source of their incomes.6 Facing dire poverty in the Mexican countryside, millions of farmers migrated off their lands and made the wrenching decision to leave behind families and communities and head northward. Once in the United States, these migrants often found jobs in the fields, performing backbreaking work for poor pay and with- out basic rights. Thousands of others toil in industrial food processing plants, where conditions today resemble those depicted in The Jungle by Upton Sinclair at the end of the 19th century. Despite NAFTA’s record, the U.S. Congress approved a similar agreement with Central America in 2005 that is expected to have similar devastating effects on small farmers in those countries. Many of them will also likely attempt to seek economic opportunities in the United States. Similar stories could be told throughout the developing world; farmers everywhere are vulnerable to import competition, not only because of free trade agreements but also due to World Bank- and IMF-promoted cuts to all types of supports for small-scale agriculture, as this report will discuss. Climate Change/Peak Oil—Fatal Threats to Globalized Agriculture Another threat from globalized industrial agriculture is the role it plays in the rapid advancement of cli- mate change on the earth. In dozens of ways, from destruction of carbon-absorbing forests, to the massive over-use of fossil fuels for production and for transportation (upon which the entire model depends), climate change is directly furthered. One-eighth of the world oil supply is now used for transportation with a very high percentage of that being used for long distance shipment of food across oceans or continents. It has been widely quoted that the average plate of food on an American dinner table today has traveled more than 1,500 miles from source to plate. According to Edward Goldsmith, Europe’s leading ecological thinker, and publisher of The Ecologist, industrial agriculture bears overall responsibility for about 25 percent of the world’s carbon dioxide emissions, 60 percent of methane gas emissions, and 70-80 percent of nitrous oxide—all of them major greenhouse gasses contributing to climate change.7 Many climate scien- tists already predict hundreds more storms on the scale of Katrina or worse, and a rise in sea levels that could inundate thousands of miles of coastal farmlands in both North and South. Ironically, there is also a reverse kind of threat to the food supply within a global industrial agricul- ture system, in that we are now approaching an unprecedented shortage of oil and natural gas on the Earth, called “peak oil” by many scientists and even corporations and governments. When that shortage fully kicks-in—and some say it is doing so now—the entire global industrial agriculture system could be threatened with collapse, as it will not be able to maintain long distance shipping in the face of increasingly high energy costs. This could play havoc with food delivery globally and itself bring on a reversal of current trends. Here’s a brief review of some of the climate related impacts from industrial agriculture: In the last few decades, climate-stabilizing tropical rainforests have been cut down at an alarming rate, mainly for conversion to industrialized export-crop production, or for cattle grazing. Millions of tons of nitrous oxide emissions are the result. Nitrogen fertilizers, a staple of industrial agriculture, are another major source of nitrous oxide, contributing as much as 10 percent of total annual nitrous oxide emissions.8 Methane emissions are also dramatically increasing because of flood-irrigated, nitrogen-dosed rice fields and the substantial increase in industrially raised livestock—in particular, cattle. Carbon dioxide emissions are largely caused by the loss of soil carbon to the atmosphere. Modern industrial agriculture massively contributes to this by practices such as drainage of wetlands, deep plow- ing that exposes the soil to the elements, use of heavy machinery that compacts the soil, use of fertilizers and pesticides that destroy soil structure, overgrazing leading to desertification, and the practice of grow- ing monocrops on a large scale. Modern irrigation is especially energy intensive. Farmer-saved seeds that have been developed and selected over millennia to succeed in specific local climates and geological configurations have longer roots that can dig deep into the soil to find sources of moisture that the short-rooted industrial commercial high yielding seeds cannot utilize. For example, in industrial corn production, it is sometimes neces- sary to pump out water from a depth of more than thirty meters. Such pumped irrigation requires more than three times as much fossil fuel energy as rain-fed corn cultivation. Commercial high yielding hybrid seed varieties, and genetically modified seeds, require much more water than traditional crops, just as they require more chemicals than non-commercial seeds. This increases dependence on perennially irrigated crops at a time when the planet’s fresh water supply is diminishing. Most modern industrial agriculture production is for export markets—this translates into massive increases in the use of increasingly scarce fossil fuels for transport, and increased production and disposal, packaging, and long distance refrigeration. All of this, however, could be undermined by the realities of “peak oil” which could spell the beginning of the end of the dominance of the industrial agriculture model. This possibility, combined with the model’s more apparent failures, makes it even more crucial that alternatives to the industrial agriculture model be studied and implemented. This will be discussed later in Part Three.

#### Oil shortages cause extinction

Lendman 7 [(Steven, Research Associate of the Centre for Research on Globalization. “Resource Wars - Can We Survive Them?,” Rense.com, 6-6-7, pg. http://www.rense.com/general76/resrouce.htm]

With the world's energy supplies finite, the US heavily dependent on imports, and "peak oil" near or approaching, "security" for America means assuring a sustainable supply of what we can't do without. It includes waging wars to get it, protect it, and defend the maritime trade routes over which it travels. That means energy's partnered with predatory New World Order globalization, militarism, wars, ecological recklessness, and now an extremist US administration willing to risk Armageddon for world dominance. Central to its plan is first controlling essential resources everywhere, at any cost, starting with oil and where most of it is located in the Middle East and Central Asia. The New "Great Game" and Perils From It The new "Great Game's" begun, but this time the stakes are greater than ever as explained above. The old one lasted nearly 100 years pitting the British empire against Tsarist Russia when the issue wasn't oil. This time, it's the US with help from Israel, Britain, the West, and satellite states like Japan, South Korea and Taiwan challenging Russia and China with today's weapons and technology on both sides making earlier ones look like toys. At stake is more than oil. It's planet earth with survival of all life on it twice over. Resources and wars for them means militarism is increasing, peace declining, and the planet's ability to sustain life front and center, if anyone's paying attention. They'd better be because beyond the point of no return, there's no second chance the way Einstein explained after the atom was split. His famous quote on future wars was : "I know not with what weapons World War III will be fought, but World War IV will be fought with sticks and stones." Under a worst case scenario, it's more dire than that. There may be nothing left but resilient beetles and bacteria in the wake of a nuclear holocaust meaning even a new stone age is way in the future, if at all. The threat is real and once nearly happened during the Cuban Missile Crisis in October, 1962. We later learned a miracle saved us at the 40th anniversary October, 2002 summit meeting in Havana attended by the US and Russia along with host country Cuba. For the first time, we were told how close we came to nuclear Armageddon. Devastation was avoided only because Soviet submarine captain Vasily Arkhipov countermanded his order to fire nuclear-tipped torpedos when Russian submarines were attacked by US destroyers near Kennedy's "quarantine" line. Had he done it, only our imagination can speculate what might have followed and whether planet earth, or at least a big part of it, would have survived.

#### *Warming is real, anthropogenic, and causes extinction*

*Richard Schiffman 9/27/13, environmental writer @ The Atlantic citing the Fifth Intergovernmental Panel on Climate Change, “What Leading Scientists Want You to Know About Today's Frightening Climate Report,” The Atlantic, http://www.theatlantic.com/technology/archive/2013/09/leading-scientists-weigh-in-on-the-mother-of-all-climate-reports/280045/*

*The polar icecaps are melting faster than we thought they would; seas are rising faster than we thought they would; extreme weather events are increasing. Have a nice day! That’s a less than scientifically rigorous summary of the findings of the Fifth Intergovernmental Panel on Climate Change (IPCC) report released this morning in Stockholm.¶ Appearing exhausted after a nearly two sleepless days fine-tuning the language of the report, co-chair Thomas Stocker called climate change “the greatest challenge of our time," adding that “each of the last three decades has been successively warmer than the past,” and that this trend is likely to continue into the foreseeable future.¶ Pledging further action to cut carbon dioxide (CO2) emissions, U.S. Secretary of State John Kerry said, "This isn’t a run of the mill report to be dumped in a filing cabinet. This isn’t a political document produced by politicians... It’s science."¶ And that science needs to be communicated to the public, loudly and clearly. I canvassed leading climate researchers for their take on the findings of the vastly influential IPCC report. What headline would they put on the news? What do they hope people hear about this report?¶ When I asked him for his headline, Michael Mann, the Director of the Earth Systems Science Center at Penn State (a former IPCC author himself) suggested: "Jury In: Climate Change Real, Caused by Us, and a Threat We Must Deal With."¶ Ted Scambos, a glaciologist and head scientist of the National Snow and Ice Data Center (NSIDC) based in Boulder would lead with: "IPCC 2013, Similar Forecasts, Better Certainty." While the report, which is issued every six to seven years, offers no radically new or alarming news, Scambos told me, it puts an exclamation point on what we already know, and refines our evolving understanding of global warming.¶ The IPCC, the indisputable rock star of UN documents, serves as the basis for global climate negotiations, like the ones that took place in Kyoto, Rio, and, more recently, Copenhagen. (The next big international climate meeting is scheduled for 2015 in Paris.) It is also arguably the most elaborately vetted and exhaustively researched scientific paper in existence. Founded in 1988 by the United Nations and the World Meteorological Organization, the IPCC represents the distilled wisdom of over 600 climate researchers in 32 countries on changes in the Earth’s atmosphere, ice and seas. It endeavors to answer the late New York mayor Ed Koch’s famous question “How am I doing?” for all of us. The answer, which won’t surprise anyone who has been following the climate change story, is not very well at all. ¶ It is now 95 percent likely that human spewed heat-trapping gases — rather than natural variability — are the main cause of climate change, according to today’s report. In 2007 the IPCC’s confidence level was 90 percent, and in 2001 it was 66 percent, and just over 50 percent in 1995. ¶ What’s more, things are getting worse more quickly than almost anyone thought would happen a few years back.¶ “If you look at the early IPCC predictions back from 1990 and what has taken place since, climate change is proceeding faster than we expected,” Mann told me by email. Mann helped develop the famous hockey-stick graph, which Al Gore used in his film “An Inconvenient Truth” to dramatize the sharp rise in temperatures in recent times. ¶ Mann cites the decline of Arctic sea ice to explain : “Given the current trajectory, we're on track for ice-free summer conditions in the Arctic in a matter of a decade or two... There is a similar story with the continental ice sheets, which are losing ice — and contributing to sea level rise — at a faster rate than the [earlier IPCC] models had predicted.”¶ But there is a lot that we still don’t understand. Reuters noted in a sneak preview of IPCC draft which was leaked in August that, while the broad global trends are clear, climate scientists were “finding it harder than expected to predict the impact in specific regions in coming decades.”¶ From year to year, the world’s hotspots are not consistent, but move erratically around the globe. The same has been true of heat waves, mega-storms and catastrophic floods, like the recent ones that ravaged the Colorado Front Range. There is broad agreement that climate change is increasing the severity of extreme weather events, but we’re not yet able to predict where and when these will show up. ¶ “It is like watching a pot boil,” Danish astrophysicist and climate scientist Peter Thejll told me. “We understand why it boils but cannot predict where the next bubble will be.”¶ There is also uncertainty about an apparent slowdown over the last decade in the rate of air temperature increase. While some critics claim that global warming has “stalled,” others point out that, when rising ocean temperatures are factored in, the Earth is actually gaining heat faster than previously anticipated.¶ “Temperatures measured over the short term are just one parameter,” said Dr Tim Barnett of the Scripps Institute of Oceanography in an interview. “There are far more critical things going on; the acidification of the ocean is happening a lot faster than anybody thought that it would, it’s sucking up more CO2, plankton, the basic food chain of the planet, are dying, it’s such a hugely important signal. Why aren’t people using that as a measure of what is going on?”¶ Barnett thinks that recent increases in volcanic activity, which spews smog-forming aerosols into the air that deflect solar radiation and cool the atmosphere, might help account for the temporary slowing of global temperature rise. But he says we shouldn’t let short term fluctuations cause us to lose sight of the big picture.¶ The dispute over temperatures underscores just how formidable the IPCC’s task of modeling the complexity of climate change is. Issued in three parts (the next two installments are due out in the spring), the full version of the IPCC will end up several times the length of Leo Tolstoy’s epic War and Peace. Yet every last word of the U.N. document needs to be signed off on by all of the nations on earth. ¶ “I do not know of any other area of any complexity and importance at all where there is unanimous agreement... and the statements so strong,” Mike MacCracken, Chief Scientist for Climate Change Programs, Climate Institute in Washington, D.C. told me in an email. “What IPCC has achieved is remarkable (and why it merited the Nobel Peace Prize granted in 2007).”¶ Not surprisingly, the IPCC’s conclusions tend to be “conservative by design,” Ken Caldeira, an atmospheric scientist with the Carnegie Institution’s Department of Global Ecology told me: “The IPCC is not supposed to represent the controversial forefront of climate science. It is supposed to represents what nearly all scientists agree on, and it does that quite effectively.”¶ Nevertheless, even these understated findings are inevitably controversial. Roger Pielke Jr., the Director of the Center for Science and Technology Policy Research at the University of Colorado, Boulder suggested a headline that focuses on the cat fight that today’s report is sure to revive: "Fresh Red Meat Offered Up in the Climate Debate, Activists and Skeptics Continue Fighting Over It." Pielke should know. A critic of Al Gore, who has called his own detractors "climate McCarthyists," Pielke has been a lightning rod for the political controversy which continues to swirl around the question of global warming, and what, if anything, we should do about it. ¶ The public’s skepticism of climate change took a dive after Hurricane Sandy. Fifty-four percent of Americans are now saying that the effects of global warming have already begun. But 41 percent surveyed in the same Gallup poll believe news about global warming is generally exaggerated, and there is a smaller but highly passionate minority that continues to believe the whole thing is a hoax. ¶ For most climate experts, however, the battle is long over — at least when it comes to the science. What remains in dispute is not whether climate change is happening, but how fast things are going to get worse.¶ There are some possibilities that are deliberately left out of the IPCC projections, because we simply don’t have enough data yet to model them. Jason Box, a visiting scholar at the Byrd Polar Research Center told me in an email interview that: “The scary elephant in the closet is terrestrial and oceanic methane release triggered by warming.” The IPCC projections don’t include the possibility — some scientists say likelihood — that huge quantities of methane (a greenhouse gas thirty times as potent as CO2) will eventually be released from thawing permafrost and undersea methane hydrate reserves. Box said that the threshhold “when humans lose control of potential management of the problem, may be sooner than expected.”¶ Box, whose work has been instrumental in documenting the rapid deterioration of the Greenland ice sheet, also believes that the latest IPCC predictions (of a maximum just under three foot ocean rise by the end of the century) may turn out to be wildly optimistic, if the Greenland ice sheet breaks up. “We are heading into uncharted territory” he said. “We are creating a different climate than the Earth has ever seen.” ¶ The head of the IPCC, Rajendra Pachauri, speaks for the scientific consensus when he says that time is fast running out to avoid the catastrophic collapse of the natural systems on which human life depends. What he recently told a group of climate scientist could be the most chilling headline of all for the U.N. report: ¶ "We have five minutes before midnight."*

#### *Warming triggers every other impact – also causes wars over land*

*Ginsborg et al. 12 – Mikkel Funder, Signe Marie Cold-Ravnkilde and Ida Peters Ginsborg - in collaboration with Nanna Callisen Bang, Denmark Institute for International Studies, 2012, "ADDRESSING CLIMATE CHANGE AND CONFLICT IN DEVELOPMENT COOPERATION EXPERIENCES FROM NATURAL RESOURCE MANAGEMENT" www.diis.dk/graphics/Publications/Reports2012/RP2012-04-Addressing-climate-change\_web.jpg.pdf*

*2.2 Climate change as a conﬂict multiplier¶ Climate change is therefore best seen as a conﬂict multiplier, rather than as a major direct cause of conﬂict in itself. Climate change may aggravate and extend the scope of existing conﬂicts, or trigger underlying and latent conﬂicts to break out into the open. ¶ Previous studies have identiﬁed a number of areas in which climate change may contribute to a worsening of conﬂicts (Brown & Crawford 2009). These include:¶ • Land and water access. Access and use rights to land are a key feature in most situations where climate change has contributed to natural resource conﬂicts so far. Climate change can intensify existing conﬂicts over land, as land becomes less fertile or is ﬂooded, or if existing resource sharing arrangements between diﬀerent users and land use practices are disrupted. In some parts of Africa, climate change may lead to a decline in available water resources of some 10–20% by the end of the century (op cit.). This may intensify existing competition for access to water at intra-state and/or subnational levels. • Food security. Reduced rainfall and rising sea levels may lead to a decline in agricultural production and a substantial loss of arable land in some parts of Africa. Reduced yields for own consumption and increasing domestic food prices may in some cases lead to civil unrest, and competition over access to land may intensify.¶ • Migration and displacement. In some cases, increased scarcity of and competition over access to water and arable land may contribute to internal or regional migration, and disasters such as ﬂoods may lead to temporary or long-term local displacement. This may in turn strengthen conﬂicts between host societies/communities and migrants looking for access to new land and resources. ¶ • Increasing inequality and injustice. Through processes such as the above, some population groups may be particularly hard hit, leading to increased inequality and a sense of injustice. This may intensify existing grievances and disputes between natural resource users and/or between resource users and outside actors such as governments – thereby increasing the risk and intensity of conﬂict.*

#### A shift to small farms is key to adapt to warming, disease, and pests – solves use of pesticides

Ho 13 [(Mae-Wan, Ph. D. in Biochemistry, Postdoctoral Fellow in Biochemical Genetics, in the University of California in San Diego, Senior Research Fellow in Queen Elizabeth College, Lecturer in Genetics and Reader in Biology in Open University, Visiting Reader in Biology at the Open University, and Visiting Professor of Biophysics in Catania University, Sicily) “Paradigm Shift Urgently Needed In Agriculture – UN Agencies Call for an End to Industrial Agriculture & Food System” Permaculture Research Institute Sept 18] AT

UNCTAD (United Nations Conference on Trade and Development) – the developing nations’ equivalent of OECD (Organization for Economic Co-operation and Development) – joins a rising chorus of UN agencies in its latest Trade and Environment Review (TER) [2]. The solution for food security under climate change is a radical transformation of the agriculture and food system that would at the same time eliminate poverty, gender inequality, poor health and malnutrition. The 320 page TER — the work of 63 authors from organisations around the world — provides a coherent, closely argued case backed up by evidence from numerous case studies and surveys showing that these interrelated problems could all be solved by a paradigm shift away from the current industrial agriculture and globalized food system to a conglomerate of small, biodiverse, ecological farms around the world and a localized food system that promotes consumption of local/regional produce. The TER proposal is not dissimilar to that made in ISIS’ special report [3] Food Futures Now: \*Organic \*Sustainable \*Fossil Fuel Free published in 2008, and in the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) [4], which resulted from a three-year consultative process involving 900 participants and 110 countries around the world. The same message was reinforced in several key publications from the FAO (Food and Agriculture Organization) [for example, 5, 6] and UNEP (United Nations Environment Programme) [7] to name but a few. Why small farmers? Small farms predominate in the world today. Of the 1.6 billion ha of global croplands, 800 m ha are smallholder farms cultivated by 99 % of the 2.6 billion farmers; most of the farms are 2 ha or less. Together, smallholder farmers produce 70 % of the food consumed [7], and 70 % of these farmers are women. Small farms are known to be 2 to 10 times as productive as large industrial farms, and much more profitable, not just in the developing world, but also in the developed world [8-10]. Unfortunately, the perverse government agricultural subsidies in developed countries that favour large fossil-fuel intensive farms, the systematic dumping of subsidized export to developing countries, and structural adjustment programmes imposed by the International Monetary Fund and the World Bank on developing countries have all worked to destroy the livelihoods of small family farmers [11, 12]. Over the past decades, small family farms have all but disappeared in developed countries. In the developing world, some 1.4 billion people are undernourished and poor, 70%-80 % living in rural areas, who can no longer afford to buy enough food, even when food is available. The successes of small agro-ecological farmsThe successes of small agro-ecological farms are well known (see [3]). Study after study has documented improvements in yield and income as well as environmental benefits from eliminating agricultural input and polluting runoffs, increase in agricultural and natural biodiversity, reduction in greenhouse gas (GHG) emissions, and most of all, improvements in water retention, carbon sequestration and resilience to climate extremes such as drought and floods. There is evidence of improved nutritional value in organically grown food, not just from reduction or elimination of pesticide residues, but from increased content of vitamins and micronutrients [13].Olivier de Schutter, UN Special Rapporteur on the Right to Food is in no doubt that agroecology is a solution to the crises of food systems and climate change [14]. He cites a study [15] published in 2006 on 286 recent sustainable agriculture projects in 57 developing countries covering 37 million ha (3 per cent of the cultivated area), which found that crop productivity on the 12.6 million farms increased by an average of 79 per cent, while also improving the supply of critical environmental service.Noémi Nemes from FAO points out that an analysis of over 50 economic studies demonstrates that in the majority of cases organic systems are more profitable than non-organic systems [16]. In developed countries, this is due to higher market prices and premiums, or lower production costs, or a combination of the two. In developing countries, greater profitability is due to higher yields and high premiums. The increased profits are accompanied by enormous savings due to reduced damages to the external ecosystems from polluting agrochemicals.The importance of local knowledge and practices and diverse polyculture for resilience to climate change Miguel Altieri at University of California Berkeley and Parviz Koohafkan from FAO stress the importance of biodiversity in agroecological farming for resilience [17], as revealed by three recent studies. In Central American hillsides after Hurricane Mitch, farmers engaged in polyculture with cover crops, intercropping and agroforestry, suffered less damage than their neighbours who practiced conventional monoculture. The survey, spearheaded by the Campesino a Campesino movement, mobilized 100 farmer-technician teams to carry out paired observations of specific agroecological indicators on 1 804 neighbouring sustainable and conventional farms in 360 communities and 24 departments of Guatemala, Honduras and Nicaragua. It found that plots where farmers adopted sustainable farming practices had 20 to 40 % more topsoil, greater soil moisture and less erosion, and experienced smaller economic losses than their conventional neighbours. Similarly in Sotonusco, Chiapas, coffee systems with high levels of vegetation complexity and plant diversity suffered less damage from Hurricane Stan than simplified coffee systems. The same in Cuba; 40 days after Hurricane Ike hit the country in 2008, a farm survey in the provinces of Holguin and Las Tunas found that diversified farms suffered losses of 50 % compared to 90 or 100 % in neighbouring monoculture farms. In addition, agroecologically managed farms showed faster recovery of productivity (80–90 % 40 days after the hurricane) than monoculture farms. All three studies highlight the importance of enhancing plant diversity and complexity in farming systems in reducing vulnerability to extreme climatic events. As many peasant farmers commonly manage polycultures and/or agroforestry systems, their knowledge and practices could provide a valuable source of information for agriculture in times of climate change. It is important for scientists to work with farmers to preserve and enhance this indigenous knowledge. Restoring biodiversity also is the best strategy to resist disease and pests. Another remarkable example of productive and resilient polycultures innovated by farmers is described by Roger Leakey at James Cook University, Cairns, Australia [18]. This involves a three-point action plan to improve and rehabilitate marginal lands, many of which are unproductive or no longer suitable for agriculture.

#### Pesticides cause fertility decreases that results in extinction

WDP 97 [Western Daily Press, 10/6/1997. “Diana's gone all sari-eyed,”]

For new research claims that PMT - which is supposed to be due to drops in oestrogen levels - is a myth, it's all in the mind, just an excuse used by women when they have those perfectly normal random bouts of depression or irritability which men get too. Only men don't have a convenient hormonal syndrome they can blame. Oestrogen is clearly tricky stuff, for elsewhere, scientists are blaming it for the potential extinction of mankind. Oestrogen in the atmosphere - and the industrial chemicals and pesticides which mimic it - are, they say, causing increases in cancer and dramatic drops in fertility in males of many species, including humans. It could, indeed, wipe out the human race. We don't dispute the way high levels of testosterone can affect males, so how come people are so eager to deny that similar changes in oestrogen levels can make us women a bit tetchy at times? Surely if it's powerful enough to result in the destruction of planetary life, it's not unreasonable to think oestrogen might also cause a teensy- weensy bit of disturbance in women now and again?

#### Industrial farming creates antibiotic resistance

Cassuto and Saville 12 [(David, professor at Pace Law School and the Director of the Brazil-American Institute for Law and Environment, Visiting Professor of Law at the Federal University of Bahia, Brazil; and Sarah, J.D. Candidate, Class of 2012, at Pace Law School) “HOT, CROWDED, AND LEGAL: A LOOK AT INDUSTRIAL AGRICULTURE IN THE UNITED STATES AND BRAZIL” ANIMAL LAW Vol. 18:2] AT

The U.S. introduced industrial agriculture to the world. Industrial agriculture has become so prevalent in the U.S. that small family farms have become something of a rarity.54 This Section looks at the domestic impacts of the spread of factory farming. 1. Animal Illnesses Caused by Feed Agricultural animals are fed unnaturally fatty diets, and sometimes growth hormones.55 Chickens and pigs often become so heavy that their legs cannot support their bodies to walk to food and water,56 and cattle are fattened with a diet of hormones, rich grains,57 and government-subsidized corn.58 Cows’ natural digestive systems are specialized to feed on grass. The corn-based diet causes severe health problems, including chronic digestive pains, intestinal ulcers, and fatal liver abscesses.59 2. Antibiotics Industrial agriculture’s excessive use of antibiotics poses threats to human and animal health. Approximately 80% of America’s 29 million pounds of antibiotic consumption is used to hasten livestock growth.60 Large amounts of antibiotics pass through the animals and end up in the ecosystem.61 This contributes to antibiotic resistance in bacteria, which makes it harder to treat human illnesses.62

#### Antibiotic-resistant diseases cause extinction

Sample 13 [Ian, Science Correspondent for the Guardian, citing Dame Sally Davies, United Kingdom Chief Medical Officer, January 23, “Antibiotic-Resistant Diseases Pose 'Apocalyptic' Threat, Top Expert Says,” http://www.theguardian.com/society/2013/jan/23/antibiotic-resistant-diseases-apocalyptic-threat]

Britain's most senior medical adviser has warned MPs that the rise in drug-resistant diseases could trigger a national emergency comparable to a catastrophic terrorist attack, pandemic flu or major coastal flooding. Dame Sally Davies, the chief medical officer, said the threat from infections that are resistant to frontline antibiotics was so serious that the issue should be added to the government's national risk register of civil emergencies. She described what she called an "apocalyptic scenario" where people going for simple operations in 20 years' time die of routine infections "because we have run out of antibiotics". The register was established in 2008 to advise the public and businesses on national emergencies that Britain could face in the next five years. The highest priority risks on the latest register include a deadly flu outbreak, catastrophic terrorist attacks, and major flooding on the scale of 1953, the last occasion on which a national emergency was declared in the UK. Speaking to MPs on the Commons science and technology committee, Davies said she would ask the Cabinet Office to add antibiotic resistance to the national risk register in the light of an annual report on infectious disease she will publish in March. Davies declined to elaborate on the report, but said its publication would coincide with a government strategy to promote more responsible use of antibiotics among doctors and the clinical professions. "We need to get our act together in this country," she told the committee. She told the Guardian: ""There are few public health issues of potentially greater importance for society than antibiotic resistance. It means we are at increasing risk of developing infections that cannot be treated – but resistance can be managed. "That is why we will be publishing a new cross-government strategy and action plan to tackle this issue in early spring." The issue of drug resistance is as old as antibiotics themselves, and arises when drugs knock out susceptible infections, leaving hardier, resilient strains behind. The survivors then multiply, and over time can become unstoppable with frontline medicines. Some of the best known are so-called hospital superbugs such as MRSA that are at the root of outbreaks among patients. "In the past, most people haven't worried because we've always had new antibiotics to turn to," said Alan Johnson, consultant clinical scientist at the Health Protection Agency. "What has changed is that the development pipeline is running dry. We don't have new antibiotics that we can rely on in the immediate future or in the longer term." Changes in modern medicine have exacerbated the problem by making patients more susceptible to infections. For example, cancer treatments weaken the immune system, and the use of catheters increases the chances of bugs entering the bloodstream. "We are becoming increasingly reliant on antibiotics in a whole range of areas of medicine. If we don't have new antibiotics to deal with the problems of resistance we see, we are going to be in serious trouble," Johnson added.

#### A shift solves global water crisis

Pretty 6—Professor of Environment and Society at University of Essex [Jules Pretty, Agroecological Approaches to Agricultural Development, Background Paper for the World Development Report 2008, November 2006]

Widespread appreciation of the `global water crisis’ recognizes that scarcity of clean water is affecting food production and conservation of ecosystems. By 2025 it is predicted that most developing countries will face either physical or economic water scarcity. Water diverted from rivers increased six fold between 1900 and 1995, far outpacing population growth. Increasing demand for fresh water now threatens the integrity of many aquatic ecosystems, and their associated environmental services. As agriculture accounts for 70% of current water withdrawals from rivers, so improving the productivity of water use in agriculture is a growing challenge. The potential for increasing food production while maintaining water-related ecosystem services rests on capacity to increase water productivity (WP), i.e. by realizing more kg of food per unit of water. Sustainable agricultural practices may do this by: i) removing limitations on productivity by enhancing soil fertility; ii) reducing soil evaporation through conservation tillage; iii) using more water efficient varieties; iv) reducing water losses to unrecoverable sinks; v) boosting productivity by supplemental irrigation in rainfed systems; and vi) inducing microclimatic changes to reduce crop water requirements (23). We calculated changes in WP for field crops in 144 projects from the data set (Table 5) based on reported crop yields and average potential evapotranspiration (ETp), for each project location during the relevant growing season. Actual evapotranspiration (ETa) was assumed to equal 80% of ETp, and ETa to remain a constant at different levels of productivity. Pg. 19

#### Industrial farming causes deadzones which also causes water crisis and destroys ocean ecosystems

Wagner 9 [(Cynthia, Editor of The Futurist magazine, explores the technological, scientific, environmental, social, and policy trends shaping our collective future) “Oceans’ Dead Zones on the Rise” World Future Society, Nov-Dec 2009] AT

A predicted global increase in food consumption is likely to create an environmental crisis where it’s least expected. Studies link a rise in industrial food production to an increase in the already large number of so-called “dead zones” in coastal waters. Dead zones are so named because they lack sufficient oxygen to support fish, crustaceans, and other forms of marine life. The World Resources Institute (WRI) recently labeled them a “rapidly growing environmental crisis.” More than 400 have been identified worldwide, and researchers have spotted one in the Gulf of Mexico near the mouth of the Mississippi River that’s roughly the size of a small country — 7,500 square miles and growing. A major contributor to the problem is industrial agriculture, according to WRI. Too much animal manure and crop fertilizer is entering into and contaminating freshwater and coastal ecosystems. The nitrogen and phosphorous they contain overfertilize the algae and phytoplankton that grow on or near the surface of the water, causing the plants to grow at an unnaturally high rate. The unusually large amounts of algae inevitably die and sink to the bottom of the gulf. As the plant matter decomposes, it exhausts much of the oxygen from the surrounding water. This process is known as eutrophication. Since much of the manure from factory farms runs off into freshwater streams before being transported out to sea, the problem it isn’t limited to coastal waters. Eutrophication may be the primary reason for freshwater problems in the United States, WRI claims. And eutrophication doesn’t just impact the environment — it affects human health and economic systems as well. Global consumption of meat is expected to increase by more than 50% within the next 25 years. WRI reports that a surge in livestock production in particular would have serious repercussions for developing countries that lack strong, enforceable environmental regulations.

#### Ocean degradation causes extinction

Craig 3 [Robin Craig, Indiana University, Robin Kundis, Winter, 34 McGeorge L. Rev. 155, p. 264-266]

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far rarely been raised in political debates. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. More generally, "ocean ecosystems play a major role in the global geochemical cycling of all the elements that represent the basic building blocks of living organisms, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." In a very real and direct sense, therefore, human degradation of marine ecosystems impairs the planet's ability to support life. Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity, "indicating that **more diverse ecosystems are more stable**." Coral reef ecosystems are particularly dependent on their biodiversity. Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is higher on coral reefs than in any other marine environment. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire lawmakers and policymakers to admit that most of the time we really do not know what we are doing to the sea and hence should be preserving marine wilderness whenever we can - especially when the United States has within its territory relatively pristine marine ecosystems that may be unique in the world. We may not know much about the sea, but we do know this much: if we kill the ocean we kill ourselves, and we will take most of the biosphere with us**.** The Black Sea is almost dead, its once-complex and productive ecosystem almost entirely replaced by a monoculture of comb jellies, "starving out fish and dolphins, emptying fishermen's nets, and converting the web of life into brainless, wraith-like blobs of jelly." More importantly, the Black Sea is not necessarily unique. The Black Sea is a microcosm of what is happening to the ocean systems at large. The stresses piled up: overfishing, oil spills, industrial discharges, nutrient pollution, wetlands destruction, the introduction of an alien species. The sea weakened, slowly at first, then collapsed with shocking suddenness. The lessons of this tragedy should not be lost to the rest of us, because much of what happened here is being repeated all over the world. The ecological stresses imposed on the Black Sea were not unique to communism. Nor, sadly, was the failure of governments to respond to the emerging crisis. Oxygen-starved "dead zones" appear with increasing frequency off the coasts of major cities and major rivers, forcing marine animals to flee and killing all that cannot. Ethics as well as enlightened self-interest thus suggest that the United States should protect fully-functioning marine ecosystems wherever possible - even if a few fishers go out of business as a result.

#### Water crises cause escalating global conflict

Rasmussen 11 [(Erik, CEO, Monday Morning; Founder, Green Growth Leaders) “Prepare for the Next Conflict: Water Wars” HuffPo 4/12] AT

For years experts have set out warnings of how the earth will be affected by the water crises, with millions dying and increasing conflicts over dwindling resources. They have proclaimed -- in line with the report from the US Senate -- that the water scarcity is a security issue, and that it will yield political stress with a risk of international water wars. This has been reflected in the oft-repeated observation that water will likely replace oil as a future cause of war between nations. Today the first glimpses of the coming water wars are emerging. Many countries in the Middle East, Africa, Central and South Asia -- e.g. Afghanistan, Pakistan, China, Kenya, Egypt, and India -- are already feeling the direct consequences of the water scarcity -- with the competition for water leading to social unrest, conflict and migration. This month the escalating concerns about the possibility of water wars triggered calls by Zafar Adeel, chair of UN-Water, for the UN to promote "hydro-diplomacy" in the Middle East and North Africa in order to avoid or at least manage emerging tensions over access to water. The gloomy outlook of our global fresh water resources points in the direction that the current conflicts and instability in these countries are only glimpses of the water wars expected to unfold in the future. Thus we need to address the water crisis that can quickly escalate and become a great humanitarian crisis and also a global safety problem. A revolution The current effort is nowhere near what is needed to deal with the water-challenge -- the world community has yet to find the solutions. Even though the 'water issue' is moving further up the agenda all over the globe: the US foreign assistance is investing massively in activities that promote water security, the European Commission is planning to present a "Blueprint for Safeguarding Europe's Water" in 2012 and the Chinese government plans to spend $600 billion over the next 10 years on measures to ensure adequate water supplies for the country. But it is not enough. The situation requires a response that goes far beyond regional and national initiatives -- we need a global water plan. With the current state of affairs, correcting measures still can be taken to avoid the crisis to be worsening. But it demands that we act now. We need a new way of thinking about water. We need to stop depleting our water resources, and urge water conservation on a global scale. This calls for a global awareness that water is a very scarce and valuable natural resource and that we need to initiate fundamental technological and management changes, and combine this with international solidarity and cooperation. In 2009, The International Water Management Institute called for a blue revolution as the only way to move forward: "We will need nothing less than a 'Blue Revolution', if we are to achieve food security and avert a serious water crisis in the future" said Dr. Colin Chartres, Director General of the International Water Management Institute. This meaning that we need ensure "more crop per drop": while many developing countries use precious water to grow 1 ton of rice per hectare, other countries produce 5 tons per hectare under similar social and water conditions, but with better technology and management. Thus, if we behave intelligently, and collaborate between neighbors, between neighboring countries, between North and South, and in the global trading system, we shall not 'run out of water'. If we do not, and "business as usual" prevails, then water wars will accelerate.

#### Thus the plan – developing countries should implement programs to support organic agriculture. This involves a shift from industrial agriculture, which uses monocultural production by large corporations for exports, to sustainable agriculture, which uses organic farming techniques by small farmers for local consumption.

#### That’s key to effect a shift to small-scale, sustainable agriculture – 7 warrants

Hoffmann 11 [(head of the Trade and Sustainable Development Section at the secretariat of the United Nations Conference on Trade and Development, member of the International Task Force on Harmonization and Equivalence in Organic Agriculture, editor in chief of UNCTAD's annual Trade and Environment Review) “ASSURING FOOD SECURITY IN DEVELOPING COUNTRIES UNDER THE CHALLENGES OF CLIMATE CHANGE: KEY TRADE AND DEVELOPMENT ISSUES OF A FUNDAMENTAL TRANSFORMATION OF AGRICULTURE” UN Conference on Trade and Development Discussion Paper No 201, Feb 2011] AT

First of all, it is important to remove or modify the existing tax and pricing policies that generate perverse incentives for sustainable production systems, such as overuse of pesticides, fertilizers, water, and fuel or encouraging land degradation. There should be a policy shift towards significantly increasing the efficiency of fertilizer and agro-chemical use and their replacement by soil-fertility-enriching (and carbon- absorptive) production methods that rely on multi-cropping, integrating crop and livestock production and the use of locally available bio-fertilizers and bio-pesticides. As most developing countries import all or the majority of the fertilizers and agro-chemicals used, a drastic reduction of their consumption therefore not only benefits the environment, but also leads to a reduction of the import bill and agricultural production costs.62 In India, for instance, overall public expenditures on agriculture have remained at approximately 11 per cent of agricultural GDP, while the share of subsidies for fertilizer, electricity and for price support of cereals and water has steadily risen at the expense of investments in public goods, such as research and development, irrigation, and rural roads (see below). Agricultural spending is about 4 times greater on subsidies than on such important public goods. In Zambia, only about 15 per cent of the 2003/2004 agricultural budget was spent on research, extension services, and rural infrastructure (World Bank, 2008: 115). Therefore, reallocating spending on private subsidies to public goods must be a central element of policy reform to encourage sustainable agricultural production. In addition to removing ‘perverse’ incentives, governments may also consider fiscal or market-based measures (e.g. GHG emission trading systems) to internalize GHG costs (for more information in this regard, see Kasterine and Vanzetti, 2010: 91–93). Second, assuring stability in land management and tenure systems is a very important policy issue. As the UN Special Rapporteur on the Right to Food put it “in a number of countries, the Green Revolution was effectively a substitute for agrarian reform: instead of encouraging increases in food production by redistributing land to the rural poor, it did so by technology” (De Schutter, 2009). In particular, small farmers need stable tenure systems to invest in soil fertility and production methods for regenerative agriculture.63 Agrarian reform should therefore continue to take centre stage on the political agenda of governments.64 This should include issues such as recognizing customary tenure, make lesser (oral) forms of evidence on land rights admissible, strengthen women’s land rights,65 allocate more land to smallholders with secured tenure, and establish decentralized land institutions (for more information, see World Bank, 2008: 139ff). Third, the share and effectiveness of public expenditures for agricultural development must be significantly increased. Public agricultural spending has been particularly lacklustre in agriculture-dominated developing countries (see table 2).66 Policymakers need to target investments carefully, putting resources into areas that have a large impact on improving physical and R&D infrastructure, linkages between farmers, and greater investment into extension education and services.67 While national-level investment in improving the transport and storage systems remains important, particular emphasis should be placed on developing locally shared infrastructure and improving value-added activities of farmers, to name but some key issues. Savings from the removal of perverse incentives can significantly reduce additional resource requirements in this regard. There could also be incentives in the form of (time-limited) land tax exemptions or lower cost credit to stimulate private investment. Such approaches are administratively simpler than subsidies and may not run afoul of WTO rules (Herren et al., 2011). According to the President of the International Fund for Agricultural Development (IFAD), “global food security can only be achieved through significant new investment in smallholder agriculture” (cited in Mactaggart, 2010b). Furthermore, governments need to pay special attention to strengthening the agricultural innovation and extension system for ecological farming methods 68, with particular emphasis on providing innovative, locally adapted and locally sourced solutions for smallholders.69 Paving the way for mainstreaming a mosaic of sustainable agricultural production methods requires integrative learning, in which farmers and researchers in agro-ecological sciences work together to determine how to best integrate traditional practices and new agro-ecological scientific discoveries. For this to take place, new channels and platforms for information exchange and skills’ transfer need to be developed (Herren et al., 2011). Enhanced regional and international South-South co-operation could play a useful role in strengthening agricultural R&D and extension capacity. The establishment of more regional centres of excellence, regional public research institutions and closer collaboration among existing research centres would be valuable steps in this direction (UNCTAD, 2010b).70 While public investment in agricultural research and development tripled in China and India in the 1980s and 1990s, it increased by barely a fifth in sub-Saharan Africa (declining in about half of these countries) (Pardey et al., 2006). With the exception of Brazil, India, West Asia and developed countries, the share of public R&D spending in agricultural GDP stagnated or even declined (see table 3).71 Fourth, agricultural policy is generally implemented by up to a dozen of governmental institutions. Achieving policy coherence and effective coordination of their activities are important for the paradigm shift towards regenerative agriculture as outlined above. Furthermore, coordination between environmental, natural resource, energy and agricultural policies is needed to maintain a consistent set of incentives for adoption of sustainable management systems and to facilitate cross-sectoral interactions, which are often involved in carbon crediting from agriculture. According to Stolze (2010), the creation of Support Platforms, which bring together potential public and private partners, supported by relevant experts, to jointly assess and further develop the priority activities identified may be worth considering. Fifth, regulations in the financial sector that facilitate the flow of funds for mitigation benefits to local communities are also important and have been a barrier to paying farmers for environmental benefits. Financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders’ ability to compete. Financial constraints originate from the lack of asset ownership to serve as collateral and the reticence to put assets at risk as collateral when they are vital to livelihoods. The demise of special credit lines to agriculture through public programmes or state banks has left huge gaps in financial services, still largely unfilled despite numerous institutional innovations (World Bank, 2008: 13). Therefore, special credit facilities (including micro-credit), community-oriented financial services, and the effective functioning of rural development banks are important in this regard. Another mechanism for facilitating access to financing for sustainable agricultural development is the broadening of payments for environmental services.72 Watershed and forest protection, for instance, create environmental services (clean drinking water, stable water flows to irrigation systems, carbon sequestration, and protection of biodiversity) for which providers should be compensated through payments from beneficiaries of these services. Interest in the widespread use of payments for environmental services has been growing, particularly in Latin America. In Nicaragua, for example, payments induced a reduction in the area of degraded pasture and annual crops by more than 50 per cent in favour of silvo-pastoralism, half of it by poor farmers (World Bank, 2008: 16). Sixth, small-scale farmers, their networks and sustainable production methods must again become an explicit component of national development strategies and an important target for development assistance (for more information, see Cook, 2009). Seventh, strengthening the performance of producer organizations and empowering the capacity of local communities should also figure prominently on the agenda of governments. Collective action by producer organizations is important for building research and skill capacity, reducing transaction costs, increasing market power, and strengthening representation in national and international policy forums. For smallholders, producer organizations are essential to achieve competitiveness (World Bank, 2008: 14). Strengthening the capacity of local communities in their stewardship of biodiversity, conservation of rangelands and fragile agro-ecological zones must be recognized as an essential strategy. Therefore, a policy framework around the stewardship of biodiversity at all levels needs to be created. Local communities can also play a very pro-active role in facilitating exchange of local knowledge, its blending with modern scientific tools and related dissemination through farmer-field schools, participatory plant breeding and community seed banks. Local communities can also be instrumental in promoting the de-centralized use of bio- and other renewable energy sources.73 Finally, agricultural mitigation and adaptation actions should be high priority candidates for being integrated into Sustainable Development Policy and Measures (SD-PAM), Nationally Appropriate Mitigation Actions (NAMAS), and National Adaptation Programmes of Action (NAPAs). According to Stolze (2010), priority should be given to adaptation measures that bring about mitigation consistent with sustainable development objectives. The integration of agricultural mitigation programmes into agricultural development strategies will need to be part of the overall effort to improve the sector’s performance and the livelihoods of small farmers (FAO, 2009a).74 The role of agriculture has to be closely interlinked with overall national development strategies (or plans) to bring about the structural transformation required for effective climate-change adaptation and mitigation.

### 1AC Pluralism

#### Contention 1 is sustainability

#### The global model of industrial agriculture has massive over-reliance on fossil fuels – this causes warming and oil shortages, and means peak oil guarantees total collapse within 40 years

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

Recently, there has been much speculation about the causes of higher oil prices, and continuing dis- cussion about the likelihood of whether or not prices will continue to rise. Commentary has focused on the war in Iraq and accompanying geopolitical instability in the Middle East; increasing dependence on Russia; governments in Latin American nationalizing their oil industries; and supply chain bottle necks such as refining capacity. However, the geological constraints on future energy supply, known as peak oil—the point at which oil production stops rising and begins an inevitable long-term decline—have received much less atten- tion. As noted in Fuelling A Food Crisis: The Impact of Peak Oil on Food Security: While the majority of constraints on access to oil could potentially be overcome through political or economic means, the geological reality of ever dwindling fossil-fuel supplies is non-negotiable. While it has taken 145 years to consume half of the 2-2.5 trillion barrels of conventional oil sup- plies generally regarded as the total available, it is likely that, given the huge increases of demand from China and India in particular, the other half will be largely consumed within the next 40 years. Some 98 percent of global crude oil comes from 45 nations, over half of which may already have peaked in oil production, including seven of the 11 OPEC nations. Major oil field discoveries fell to zero for the first time in 2003, while the excess capacity held by OPEC nations has dwindled, from an average of 30 percent to about 1 percent of global demand today. World oil and gas production is declining at an average of 4-6 percent a year, while demand is growing at 2-3 percent a year.2 Ironically, the present system of industrial agriculture is a major contributor to these problems. Agriculture is responsible for an estimated one-third of emissions that contribute to global warming and climate change. It is generally agreed that about 25 percent of the main greenhouse gas—carbon dioxide—is produced by agricultural pesticides and chemicals, and via deforestation and the burning of bio- mass. Most of the methane in the atmosphere comes from domestic ruminants, forest fires, wetland rice cultivation and waste products, while conventional tillage and fertilizer use account for 70 percent of the nitrous oxides.3 This set of conditions is rapidly destroying our shared heritage called the “commons”—that is, the planet’s natural resources necessary to grow food. And, although the revenge of nature itself may eventually force the end of the current global industrial agriculture model, the cost will most certainly be the destruction of millions of livelihoods and lives, scarce food supplies, and devastation to the planet’s natural systems. Given the potential for such catastrophe, it is critical to quickly restore and enhance food and fiber systems that are more regionally based, and that respect societies, cultures, and nature. GROWING FOOD ONCE EXPRESSED a “personal” relationship between human beings, wildlife and the earth. Successful farming was based on generations of accumulated knowledge about place: climate, land, water, soil and the organisms within it; mixing and rotating crops, seed saving, breeding, and recy- cling organic matter. Growing food was an intimate process; it involved farmer, land, and community, with the goal of sustaining that life-giving exchange in perpetuity. At the heart of the matter: a deep love of the land. Over the past several centuries, most food has primarily been grown locally for local community and family consumption. Until very recently, developing countries grew 90 percent of the food they con- sumed domestically and for small local markets.1 Over the centuries, local farmers developed seeds and used them collectively as a community to re-plant for the next harvest. They invented a variety of cultiva- tion methods, crops, and pest management systems that were unique to local ecosystems and cultures. Communities freely shared all local “commons”—water, labor, seeds, traditional knowledge and innova- tion—that were vital to food cultivation and the survival of stable communities. Natural resources were carefully nurtured to maintain an important balance between regional fish, fowl, and other wild creatures, and the needs of the community. As one United Nations Environment Program (UNEP) report observed: “In India, peasants grow over forty different crops on localities that have been cultivated for more than two thousand years without a drop in yields, yet have remained free of pests.”2 The report also attested to the benefits of agro-ecologi- cal approaches over millennia, citing practices of indigenous populations that are “based on ecological knowledge and understanding” and are “highly efficient and productive and inherently sustainable.” Cultures have successfully adapted to difficult environments with innovative techniques for irrigation, drainage, soil fertility, frost control, and disease management. In Central America, for example, ingenious raised-bed systems known variously as chiampas, waru waru, or tablones have withstood truly terrible geo- logical conditions and have successfully fed populations without ecological damage. Similarly, highly evolved, locally appropriate systems are found in Africa, the Andes region, South Asia, and many other places. All of these successful adaptations resulted from farmers’ intimate relations with the land, weather conditions, and unique local conditions. In this way, people fed themselves for millennia. Local, decentralized food production still provides millions of livelihoods around the world and pro- vides fresh, nutritious food direct from the land to the table without the stresses and expenses of long distance shipping. India’s wheat economy is a good example of this. Millions of Indian farmers grow over 6 billion tons of wheat per year. Leading food rights advocate Dr. Vandana Shiva explains the process in the IFG book Views From the South: A chain of traders (artis), bring wheat directly from the farm to the local shops. Most people buy fresh wheat from the local corner store (kirana) and then take it to the local mill operators (chakki wallas). It is estimated that over 2 million small neighborhood mills produce fresh flour. Additionally, flour is produced by women working in households. Shiva observes: “Less than 1 percent of flour carries a brand name because Indian consumers trust their own supervision of quality at the local mill better than a brand name attached to stale, packaged flour.” Small-scale, local food economies have successfully sustained millions of people for many centuries with little capital investment and infrastructure. Rather than technology and investment capital, people and natural resources (“natural capital”) are at the center of this system. Additionally, these centuries-old knowledge systems begat amazing food diversity. Traditional cultures enjoyed beautiful varieties of rice, potatoes, beans, corn, and other foods. Indeed, cultures were created and defined by the diversity of their foods. Annual festivals and seasonal celebrations of planting and harvesting helped ensure that the culture was imbued with nature-based practices over the centuries. radical shift to corporate control During the last century, a radical new approach to agriculture emerged. Instead of local farmers growing food locally for their own communities, a new highly centralized, global system of industrialized agricul- ture rapidly began replacing the local, decentralized small-scale food systems connected to traditional cul- tures, climates, geography, ecosystems, and other endemic factors. This model now represents the dominant paradigm for industrial, northern countries. Beginning with the Green Revolution, many developing countries began to adopt industrial agriculture practices as well. This industrial regime of the last few decades is characterized by excessive focus on the import and export of food, and is promoted and enforced by international institutions and agreements such as the World Bank, the International Monetary Fund (IMF), the World Trade Organization (WTO) and other regional and bilateral trade and investment agreements. Unlike the agreements of other international bureaucracies, such as those of the United Nations, the WTO’s agreements are legally binding and have strong enforcement capability. Thus, they have become the most important vehicles for implementing economic and also social policies across the world. Though the rules and policies of recent global agreements and institutions are negotiated between governments, they are largely crafted by large agribusiness corporations—the primary beneficiaries. A salient feature of these agreements is that food is treated as a commodity rather than as crucial for the survival of all humans. Given that food is a basic necessity of life, unlike other commodities such as tires or computers, many governments and civil society movements believe that such policies are griev- ously misguided. As Lori Wallach of Public Citizen puts it, “Food—like water—is not an optional prod- uct that consumers may choose to purchase: food is the basis of life. People without food die, while people without cars or tires walk and people without tin ore use local materials.”3 As such, many believe that governments have an obligation to ensure food as a basic human right. The result of this shift has been a loss of livelihoods for millions of farmers, and the depression of rural communities; an increase in hunger in many parts of the globe; compromised nutrition and safety of food; increased environmental destruction; and the control of food production and distribution by an ever-smaller number of giant global agribusinesses. (See Box 1.) These are some of the outcomes of this shift: ❖ Local self-reliant food systems that had provided food and livelihoods for millions, and a secure food supply, are rapidly being replaced by corporate control—often foreign corporations—over farm inputs, energy, crop commodity prices, food production, and marketing. These corporations value profits and export trade over the needs of local communities for food and sustainable products. ❖ Industrial agriculture eliminates diverse food production for local needs, replacing it with large scale monocultural production of one or two crops appropriate for export markets; thus, diminishing natural biodiversity—of micro organisms, plants, insects, and animals, and diminishing local food supply as well. ❖ Heavy use of industrial agricultural processes, including pesticides, chemical fertilizers and fossil fuel-based machinery are rapidly destroying the vitality of the soil, polluting and over-using scarce fresh water, polluting the air, and harming wildlife and humans. ❖ The corporate introduction of genetically modified organisms (GMOs) and plants further destroys biodiversity and brings unknown, potentially catastrophic dangers via new forms of biopollution. ❖ The export driven model of globalized agriculture requires a huge increase in transport infrastruc- tures —roads, ports, airports, energy grids—often constructed at the expense of nature and in defiance of global energy shortages. ❖ Massive shipments of agricultural commodities across great distances requires additional fossil fuel usage, refrigeration, packaging, etc. and fosters mobility of exotic plant and animal species, and the spread of pests, viruses, bacteria, and disease. ❖ Control over and accesstothe mostessential elements of life—thecommons—arebeingstrippedaway from local communities and given over to corporations (often via World Bank privatization schemes). ❖ Traditional knowledge of seeds, plants, and cultivation are being expropriated for profit, and patented by large corporations—a process known as “biopiracy.” ❖ Agriculture accounts for approximately 25 percent of carbon dioxide emissions; and 70 percent of nitrous oxide emissions.4 global macro effects The expansion of the industrial agriculture model affects everyone, whether they live in cities, suburban America, or the countryside in the global South or North. To illustrate, we offer examples below on how globalized industrial agriculture relates to two of the most pressing issues of our time: immigration and global warming. –9– part one The Roots of Migration The issue of immigration has dozens of countries in serious turmoil. The U.S. is no exception. Here, the raging debate about immigration is largely the result of globalized industrial agriculture, and trade agree- ments that embrace this model. Between 1990 and 2005, the number of migrants from Mexico and Central America living in the U.S. without authorization spiked from 2 million to an estimated 6.2 million. Many of these migrants could be called “NAFTA refugees.” The North American Free Trade Agreement (NAFTA), which went into effect in 1994, lifted barriers to “free” agricultural trade between North and South, with dire consequences. As part of the condition for joining NAFTA, Mexico was required to drastically change its Constitution and abandon the traditional ejido system of communal land and resource ownership. This is the system created after the Mexican Revolution of the early 20th century that made traditional farming in Mexico productive and viable. Mexico was also forced to dismantle a system that had provided a guaranteed floor price for corn for Mexican farmers, which had sustained over 3 million corn producers. As a result of NAFTA, Mexican farmers suddenly found themselves competing with an influx of cheap agricultural commodities produced by large-scale, heavily subsidized U.S. producers. Corn imports from the North grew 17-fold between 1993 and 2001 and accounted for 25 percent of Mexican corn consumption. This compared to a pre-NAFTA figure of 2 percent.5 Within a year of NAFTA’s passage, Mexican production of corn and other basic grains fell by 50 percent, and millions of peasant farmers lost a significant source of their incomes.6 Facing dire poverty in the Mexican countryside, millions of farmers migrated off their lands and made the wrenching decision to leave behind families and communities and head northward. Once in the United States, these migrants often found jobs in the fields, performing backbreaking work for poor pay and with- out basic rights. Thousands of others toil in industrial food processing plants, where conditions today resemble those depicted in The Jungle by Upton Sinclair at the end of the 19th century. Despite NAFTA’s record, the U.S. Congress approved a similar agreement with Central America in 2005 that is expected to have similar devastating effects on small farmers in those countries. Many of them will also likely attempt to seek economic opportunities in the United States. Similar stories could be told throughout the developing world; farmers everywhere are vulnerable to import competition, not only because of free trade agreements but also due to World Bank- and IMF-promoted cuts to all types of supports for small-scale agriculture, as this report will discuss. Climate Change/Peak Oil—Fatal Threats to Globalized Agriculture Another threat from globalized industrial agriculture is the role it plays in the rapid advancement of cli- mate change on the earth. In dozens of ways, from destruction of carbon-absorbing forests, to the massive over-use of fossil fuels for production and for transportation (upon which the entire model depends), climate change is directly furthered. One-eighth of the world oil supply is now used for transportation with a very high percentage of that being used for long distance shipment of food across oceans or continents. It has been widely quoted that the average plate of food on an American dinner table today has traveled more than 1,500 miles from source to plate. According to Edward Goldsmith, Europe’s leading ecological thinker, and publisher of The Ecologist, industrial agriculture bears overall responsibility for about 25 percent of the world’s carbon dioxide emissions, 60 percent of methane gas emissions, and 70-80 percent of nitrous oxide—all of them major greenhouse gasses contributing to climate change.7 Many climate scien- tists already predict hundreds more storms on the scale of Katrina or worse, and a rise in sea levels that could inundate thousands of miles of coastal farmlands in both North and South. Ironically, there is also a reverse kind of threat to the food supply within a global industrial agricul- ture system, in that we are now approaching an unprecedented shortage of oil and natural gas on the Earth, called “peak oil” by many scientists and even corporations and governments. When that shortage fully kicks-in—and some say it is doing so now—the entire global industrial agriculture system could be threatened with collapse, as it will not be able to maintain long distance shipping in the face of increasingly high energy costs. This could play havoc with food delivery globally and itself bring on a reversal of current trends. Here’s a brief review of some of the climate related impacts from industrial agriculture: In the last few decades, climate-stabilizing tropical rainforests have been cut down at an alarming rate, mainly for conversion to industrialized export-crop production, or for cattle grazing. Millions of tons of nitrous oxide emissions are the result. Nitrogen fertilizers, a staple of industrial agriculture, are another major source of nitrous oxide, contributing as much as 10 percent of total annual nitrous oxide emissions.8 Methane emissions are also dramatically increasing because of flood-irrigated, nitrogen-dosed rice fields and the substantial increase in industrially raised livestock—in particular, cattle. Carbon dioxide emissions are largely caused by the loss of soil carbon to the atmosphere. Modern industrial agriculture massively contributes to this by practices such as drainage of wetlands, deep plow- ing that exposes the soil to the elements, use of heavy machinery that compacts the soil, use of fertilizers and pesticides that destroy soil structure, overgrazing leading to desertification, and the practice of grow- ing monocrops on a large scale. Modern irrigation is especially energy intensive. Farmer-saved seeds that have been developed and selected over millennia to succeed in specific local climates and geological configurations have longer roots that can dig deep into the soil to find sources of moisture that the short-rooted industrial commercial high yielding seeds cannot utilize. For example, in industrial corn production, it is sometimes neces- sary to pump out water from a depth of more than thirty meters. Such pumped irrigation requires more than three times as much fossil fuel energy as rain-fed corn cultivation. Commercial high yielding hybrid seed varieties, and genetically modified seeds, require much more water than traditional crops, just as they require more chemicals than non-commercial seeds. This increases dependence on perennially irrigated crops at a time when the planet’s fresh water supply is diminishing. Most modern industrial agriculture production is for export markets—this translates into massive increases in the use of increasingly scarce fossil fuels for transport, and increased production and disposal, packaging, and long distance refrigeration. All of this, however, could be undermined by the realities of “peak oil” which could spell the beginning of the end of the dominance of the industrial agriculture model. This possibility, combined with the model’s more apparent failures, makes it even more crucial that alternatives to the industrial agriculture model be studied and implemented. This will be discussed later in Part Three.

#### Oil shortages cause extinction

Lendman 7 [(Steven, Research Associate of the Centre for Research on Globalization. “Resource Wars - Can We Survive Them?,” Rense.com, 6-6-7, pg. http://www.rense.com/general76/resrouce.htm]

With the world's energy supplies finite, the US heavily dependent on imports, and "peak oil" near or approaching, "security" for America means assuring a sustainable supply of what we can't do without. It includes waging wars to get it, protect it, and defend the maritime trade routes over which it travels. That means energy's partnered with predatory New World Order globalization, militarism, wars, ecological recklessness, and now an extremist US administration willing to risk Armageddon for world dominance. Central to its plan is first controlling essential resources everywhere, at any cost, starting with oil and where most of it is located in the Middle East and Central Asia. The New "Great Game" and Perils From It The new "Great Game's" begun, but this time the stakes are greater than ever as explained above. The old one lasted nearly 100 years pitting the British empire against Tsarist Russia when the issue wasn't oil. This time, it's the US with help from Israel, Britain, the West, and satellite states like Japan, South Korea and Taiwan challenging Russia and China with today's weapons and technology on both sides making earlier ones look like toys. At stake is more than oil. It's planet earth with survival of all life on it twice over. Resources and wars for them means militarism is increasing, peace declining, and the planet's ability to sustain life front and center, if anyone's paying attention. They'd better be because beyond the point of no return, there's no second chance the way Einstein explained after the atom was split. His famous quote on future wars was : "I know not with what weapons World War III will be fought, but World War IV will be fought with sticks and stones." Under a worst case scenario, it's more dire than that. There may be nothing left but resilient beetles and bacteria in the wake of a nuclear holocaust meaning even a new stone age is way in the future, if at all. The threat is real and once nearly happened during the Cuban Missile Crisis in October, 1962. We later learned a miracle saved us at the 40th anniversary October, 2002 summit meeting in Havana attended by the US and Russia along with host country Cuba. For the first time, we were told how close we came to nuclear Armageddon. Devastation was avoided only because Soviet submarine captain Vasily Arkhipov countermanded his order to fire nuclear-tipped torpedos when Russian submarines were attacked by US destroyers near Kennedy's "quarantine" line. Had he done it, only our imagination can speculate what might have followed and whether planet earth, or at least a big part of it, would have survived.

#### Future needs for farming are unpredictable—we have a moral obligation to keep genetic options open for future generations, which monocultures destroy

Fowler and Mooney 90 [Cary Fowler and Pat Mooney, 1990. Senior Officer at the UN Food and Agriculture Organization and Staff Member at the Rural Advancement Fund International. Shattering: Food, Politics, and the Loss of Genetic Diversity]

But are we ready for the staggering responsibility of guiding future evolution on earth? The first rule of successful tinkering is to save all the pieces; yet in agriculture we are discarding the pieces before we even know their value or their role. We are burning books that we have not yet read. We are like the English monarch who directed that straight trees be destroyed but curved boughs be encouraged, because they were better for constructing hulls for sailing ships his country would need. We, too, must prepare for the future- but we must bear in mind that we do not know what the future will bring. We do not presume to know, for example, how the human race will deal with the ultimate demise of the petrochemical age. We know we will have to, because the supply of nonrenewable resources is finite. Our generation may not have to face that problem, but some future generation will. Sensing that the dislocations and adjustments will be tremendous and painful some simply choose to deny their inevitability. Try telling a plant breeder that we will not always have oil based fertilizers and pesticides to use on our heavily dependent (even addicted) crops, and, likely as not, the response will be, “Yes we will.” We have to. How else can we feed the world's population?" We do not know the answer to that question. But we do insist that, no matter how pressing the human need for inexhaustible supply of oil-based agricultural inputs might be, simple logic and the events of the last decade tell us that we cannot depend on them forever. In the long history of agriculture, chemical dependent farming may well come to be seen as a passing fad. While praying for some as yet undreamed of solution to the problem of producing great quantities of good without great quantities of nutrients, we might do well at least to save those crop resources adapted to limited input agriculture- the varieties that have evolved and survived for thousand of years without post- World War II chemicals. These traditional varieties may not be a total solution. But in a world with less and less oil, modem varieties addicted to oil will not be a solution either. To suggest otherwise is a cruel hoax. Future generations will deal with these problems either with or without the crop genetic resources that exist today. We assert it is our moral and evolutionary responsibility to see that future generations have these resources to use or not, as they deem appropriate.

#### Warming is real, anthropogenic, and causes extinction

Richard Schiffman 9/27/13, environmental writer @ The Atlantic citing the Fifth Intergovernmental Panel on Climate Change, “What Leading Scientists Want You to Know About Today's Frightening Climate Report,” The Atlantic, http://www.theatlantic.com/technology/archive/2013/09/leading-scientists-weigh-in-on-the-mother-of-all-climate-reports/280045/

The polar icecaps are melting faster than we thought they would; seas are rising faster than we thought they would; extreme weather events are increasing. Have a nice day! That’s a less than scientifically rigorous summary of the findings of the Fifth Intergovernmental Panel on Climate Change (IPCC) report released this morning in Stockholm.¶ Appearing exhausted after a nearly two sleepless days fine-tuning the language of the report, co-chair Thomas Stocker called climate change “the greatest challenge of our time," adding that “each of the last three decades has been successively warmer than the past,” and that this trend is likely to continue into the foreseeable future.¶ Pledging further action to cut carbon dioxide (CO2) emissions, U.S. Secretary of State John Kerry said, "This isn’t a run of the mill report to be dumped in a filing cabinet. This isn’t a political document produced by politicians... It’s science."¶ And that science needs to be communicated to the public, loudly and clearly. I canvassed leading climate researchers for their take on the findings of the vastly influential IPCC report. What headline would they put on the news? What do they hope people hear about this report?¶ When I asked him for his headline, Michael Mann, the Director of the Earth Systems Science Center at Penn State (a former IPCC author himself) suggested: "Jury In: Climate Change Real, Caused by Us, and a Threat We Must Deal With."¶ Ted Scambos, a glaciologist and head scientist of the National Snow and Ice Data Center (NSIDC) based in Boulder would lead with: "IPCC 2013, Similar Forecasts, Better Certainty." While the report, which is issued every six to seven years, offers no radically new or alarming news, Scambos told me, it puts an exclamation point on what we already know, and refines our evolving understanding of global warming.¶ The IPCC, the indisputable rock star of UN documents, serves as the basis for global climate negotiations, like the ones that took place in Kyoto, Rio, and, more recently, Copenhagen. (The next big international climate meeting is scheduled for 2015 in Paris.) It is also arguably the most elaborately vetted and exhaustively researched scientific paper in existence. Founded in 1988 by the United Nations and the World Meteorological Organization, the IPCC represents the distilled wisdom of over 600 climate researchers in 32 countries on changes in the Earth’s atmosphere, ice and seas. It endeavors to answer the late New York mayor Ed Koch’s famous question “How am I doing?” for all of us. The answer, which won’t surprise anyone who has been following the climate change story, is not very well at all. ¶ It is now 95 percent likely that human spewed heat-trapping gases — rather than natural variability — are the main cause of climate change, according to today’s report. In 2007 the IPCC’s confidence level was 90 percent, and in 2001 it was 66 percent, and just over 50 percent in 1995. ¶ What’s more, things are getting worse more quickly than almost anyone thought would happen a few years back.¶ “If you look at the early IPCC predictions back from 1990 and what has taken place since, climate change is proceeding faster than we expected,” Mann told me by email. Mann helped develop the famous hockey-stick graph, which Al Gore used in his film “An Inconvenient Truth” to dramatize the sharp rise in temperatures in recent times. ¶ Mann cites the decline of Arctic sea ice to explain : “Given the current trajectory, we're on track for ice-free summer conditions in the Arctic in a matter of a decade or two... There is a similar story with the continental ice sheets, which are losing ice — and contributing to sea level rise — at a faster rate than the [earlier IPCC] models had predicted.”¶ But there is a lot that we still don’t understand. Reuters noted in a sneak preview of IPCC draft which was leaked in August that, while the broad global trends are clear, climate scientists were “finding it harder than expected to predict the impact in specific regions in coming decades.”¶ From year to year, the world’s hotspots are not consistent, but move erratically around the globe. The same has been true of heat waves, mega-storms and catastrophic floods, like the recent ones that ravaged the Colorado Front Range. There is broad agreement that climate change is increasing the severity of extreme weather events, but we’re not yet able to predict where and when these will show up. ¶ “It is like watching a pot boil,” Danish astrophysicist and climate scientist Peter Thejll told me. “We understand why it boils but cannot predict where the next bubble will be.”¶ There is also uncertainty about an apparent slowdown over the last decade in the rate of air temperature increase. While some critics claim that global warming has “stalled,” others point out that, when rising ocean temperatures are factored in, the Earth is actually gaining heat faster than previously anticipated.¶ “Temperatures measured over the short term are just one parameter,” said Dr Tim Barnett of the Scripps Institute of Oceanography in an interview. “There are far more critical things going on; the acidification of the ocean is happening a lot faster than anybody thought that it would, it’s sucking up more CO2, plankton, the basic food chain of the planet, are dying, it’s such a hugely important signal. Why aren’t people using that as a measure of what is going on?”¶ Barnett thinks that recent increases in volcanic activity, which spews smog-forming aerosols into the air that deflect solar radiation and cool the atmosphere, might help account for the temporary slowing of global temperature rise. But he says we shouldn’t let short term fluctuations cause us to lose sight of the big picture.¶ The dispute over temperatures underscores just how formidable the IPCC’s task of modeling the complexity of climate change is. Issued in three parts (the next two installments are due out in the spring), the full version of the IPCC will end up several times the length of Leo Tolstoy’s epic War and Peace. Yet every last word of the U.N. document needs to be signed off on by all of the nations on earth. ¶ “I do not know of any other area of any complexity and importance at all where there is unanimous agreement... and the statements so strong,” Mike MacCracken, Chief Scientist for Climate Change Programs, Climate Institute in Washington, D.C. told me in an email. “What IPCC has achieved is remarkable (and why it merited the Nobel Peace Prize granted in 2007).”¶ Not surprisingly, the IPCC’s conclusions tend to be “conservative by design,” Ken Caldeira, an atmospheric scientist with the Carnegie Institution’s Department of Global Ecology told me: “The IPCC is not supposed to represent the controversial forefront of climate science. It is supposed to represents what nearly all scientists agree on, and it does that quite effectively.”¶ Nevertheless, even these understated findings are inevitably controversial. Roger Pielke Jr., the Director of the Center for Science and Technology Policy Research at the University of Colorado, Boulder suggested a headline that focuses on the cat fight that today’s report is sure to revive: "Fresh Red Meat Offered Up in the Climate Debate, Activists and Skeptics Continue Fighting Over It." Pielke should know. A critic of Al Gore, who has called his own detractors "climate McCarthyists," Pielke has been a lightning rod for the political controversy which continues to swirl around the question of global warming, and what, if anything, we should do about it. ¶ The public’s skepticism of climate change took a dive after Hurricane Sandy. Fifty-four percent of Americans are now saying that the effects of global warming have already begun. But 41 percent surveyed in the same Gallup poll believe news about global warming is generally exaggerated, and there is a smaller but highly passionate minority that continues to believe the whole thing is a hoax. ¶ For most climate experts, however, the battle is long over — at least when it comes to the science. What remains in dispute is not whether climate change is happening, but how fast things are going to get worse.¶ There are some possibilities that are deliberately left out of the IPCC projections, because we simply don’t have enough data yet to model them. Jason Box, a visiting scholar at the Byrd Polar Research Center told me in an email interview that: “The scary elephant in the closet is terrestrial and oceanic methane release triggered by warming.” The IPCC projections don’t include the possibility — some scientists say likelihood — that huge quantities of methane (a greenhouse gas thirty times as potent as CO2) will eventually be released from thawing permafrost and undersea methane hydrate reserves. Box said that the threshhold “when humans lose control of potential management of the problem, may be sooner than expected.”¶ Box, whose work has been instrumental in documenting the rapid deterioration of the Greenland ice sheet, also believes that the latest IPCC predictions (of a maximum just under three foot ocean rise by the end of the century) may turn out to be wildly optimistic, if the Greenland ice sheet breaks up. “We are heading into uncharted territory” he said. “We are creating a different climate than the Earth has ever seen.” ¶ The head of the IPCC, Rajendra Pachauri, speaks for the scientific consensus when he says that time is fast running out to avoid the catastrophic collapse of the natural systems on which human life depends. What he recently told a group of climate scientist could be the most chilling headline of all for the U.N. report: ¶ "We have five minutes before midnight."

#### Warming triggers every other impact – also causes wars over land

Ginsborg et al. 12 – Mikkel Funder, Signe Marie Cold-Ravnkilde and Ida Peters Ginsborg - in collaboration with Nanna Callisen Bang, Denmark Institute for International Studies, 2012, "ADDRESSING CLIMATE CHANGE AND CONFLICT IN DEVELOPMENT COOPERATION EXPERIENCES FROM NATURAL RESOURCE MANAGEMENT" www.diis.dk/graphics/Publications/Reports2012/RP2012-04-Addressing-climate-change\_web.jpg.pdf

2.2 Climate change as a conﬂict multiplier¶ Climate change is therefore best seen as a conﬂict multiplier, rather than as a major direct cause of conﬂict in itself. Climate change may aggravate and extend the scope of existing conﬂicts, or trigger underlying and latent conﬂicts to break out into the open. ¶ Previous studies have identiﬁed a number of areas in which climate change may contribute to a worsening of conﬂicts (Brown & Crawford 2009). These include:¶ • Land and water access. Access and use rights to land are a key feature in most situations where climate change has contributed to natural resource conﬂicts so far. Climate change can intensify existing conﬂicts over land, as land becomes less fertile or is ﬂooded, or if existing resource sharing arrangements between diﬀerent users and land use practices are disrupted. In some parts of Africa, climate change may lead to a decline in available water resources of some 10–20% by the end of the century (op cit.). This may intensify existing competition for access to water at intra-state and/or subnational levels. • Food security. Reduced rainfall and rising sea levels may lead to a decline in agricultural production and a substantial loss of arable land in some parts of Africa. Reduced yields for own consumption and increasing domestic food prices may in some cases lead to civil unrest, and competition over access to land may intensify.¶ • Migration and displacement. In some cases, increased scarcity of and competition over access to water and arable land may contribute to internal or regional migration, and disasters such as ﬂoods may lead to temporary or long-term local displacement. This may in turn strengthen conﬂicts between host societies/communities and migrants looking for access to new land and resources. ¶ • Increasing inequality and injustice. Through processes such as the above, some population groups may be particularly hard hit, leading to increased inequality and a sense of injustice. This may intensify existing grievances and disputes between natural resource users and/or between resource users and outside actors such as governments – thereby increasing the risk and intensity of conﬂict.

#### A shift to small farms is key to adapt to warming, disease, and pests – solves use of pesticides

Ho 13 [(Mae-Wan, Ph. D. in Biochemistry, Postdoctoral Fellow in Biochemical Genetics, in the University of California in San Diego, Senior Research Fellow in Queen Elizabeth College, Lecturer in Genetics and Reader in Biology in Open University, Visiting Reader in Biology at the Open University, and Visiting Professor of Biophysics in Catania University, Sicily) “Paradigm Shift Urgently Needed In Agriculture – UN Agencies Call for an End to Industrial Agriculture & Food System” Permaculture Research Institute Sept 18] AT

UNCTAD (United Nations Conference on Trade and Development) – the developing nations’ equivalent of OECD (Organization for Economic Co-operation and Development) – joins a rising chorus of UN agencies in its latest Trade and Environment Review (TER) [2]. The solution for food security under climate change is a radical transformation of the agriculture and food system that would at the same time eliminate poverty, gender inequality, poor health and malnutrition. The 320 page TER — the work of 63 authors from organisations around the world — provides a coherent, closely argued case backed up by evidence from numerous case studies and surveys showing that these interrelated problems could all be solved by a paradigm shift away from the current industrial agriculture and globalized food system to a conglomerate of small, biodiverse, ecological farms around the world and a localized food system that promotes consumption of local/regional produce. The TER proposal is not dissimilar to that made in ISIS’ special report [3] Food Futures Now: \*Organic \*Sustainable \*Fossil Fuel Free published in 2008, and in the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) [4], which resulted from a three-year consultative process involving 900 participants and 110 countries around the world. The same message was reinforced in several key publications from the FAO (Food and Agriculture Organization) [for example, 5, 6] and UNEP (United Nations Environment Programme) [7] to name but a few. Why small farmers? Small farms predominate in the world today. Of the 1.6 billion ha of global croplands, 800 m ha are smallholder farms cultivated by 99 % of the 2.6 billion farmers; most of the farms are 2 ha or less. Together, smallholder farmers produce 70 % of the food consumed [7], and 70 % of these farmers are women. Small farms are known to be 2 to 10 times as productive as large industrial farms, and much more profitable, not just in the developing world, but also in the developed world [8-10]. Unfortunately, the perverse government agricultural subsidies in developed countries that favour large fossil-fuel intensive farms, the systematic dumping of subsidized export to developing countries, and structural adjustment programmes imposed by the International Monetary Fund and the World Bank on developing countries have all worked to destroy the livelihoods of small family farmers [11, 12]. Over the past decades, small family farms have all but disappeared in developed countries. In the developing world, some 1.4 billion people are undernourished and poor, 70%-80 % living in rural areas, who can no longer afford to buy enough food, even when food is available. The successes of small agro-ecological farmsThe successes of small agro-ecological farms are well known (see [3]). Study after study has documented improvements in yield and income as well as environmental benefits from eliminating agricultural input and polluting runoffs, increase in agricultural and natural biodiversity, reduction in greenhouse gas (GHG) emissions, and most of all, improvements in water retention, carbon sequestration and resilience to climate extremes such as drought and floods. There is evidence of improved nutritional value in organically grown food, not just from reduction or elimination of pesticide residues, but from increased content of vitamins and micronutrients [13].Olivier de Schutter, UN Special Rapporteur on the Right to Food is in no doubt that agroecology is a solution to the crises of food systems and climate change [14]. He cites a study [15] published in 2006 on 286 recent sustainable agriculture projects in 57 developing countries covering 37 million ha (3 per cent of the cultivated area), which found that crop productivity on the 12.6 million farms increased by an average of 79 per cent, while also improving the supply of critical environmental service.Noémi Nemes from FAO points out that an analysis of over 50 economic studies demonstrates that in the majority of cases organic systems are more profitable than non-organic systems [16]. In developed countries, this is due to higher market prices and premiums, or lower production costs, or a combination of the two. In developing countries, greater profitability is due to higher yields and high premiums. The increased profits are accompanied by enormous savings due to reduced damages to the external ecosystems from polluting agrochemicals.The importance of local knowledge and practices and diverse polyculture for resilience to climate change Miguel Altieri at University of California Berkeley and Parviz Koohafkan from FAO stress the importance of biodiversity in agroecological farming for resilience [17], as revealed by three recent studies. In Central American hillsides after Hurricane Mitch, farmers engaged in polyculture with cover crops, intercropping and agroforestry, suffered less damage than their neighbours who practiced conventional monoculture. The survey, spearheaded by the Campesino a Campesino movement, mobilized 100 farmer-technician teams to carry out paired observations of specific agroecological indicators on 1 804 neighbouring sustainable and conventional farms in 360 communities and 24 departments of Guatemala, Honduras and Nicaragua. It found that plots where farmers adopted sustainable farming practices had 20 to 40 % more topsoil, greater soil moisture and less erosion, and experienced smaller economic losses than their conventional neighbours. Similarly in Sotonusco, Chiapas, coffee systems with high levels of vegetation complexity and plant diversity suffered less damage from Hurricane Stan than simplified coffee systems. The same in Cuba; 40 days after Hurricane Ike hit the country in 2008, a farm survey in the provinces of Holguin and Las Tunas found that diversified farms suffered losses of 50 % compared to 90 or 100 % in neighbouring monoculture farms. In addition, agroecologically managed farms showed faster recovery of productivity (80–90 % 40 days after the hurricane) than monoculture farms. All three studies highlight the importance of enhancing plant diversity and complexity in farming systems in reducing vulnerability to extreme climatic events. As many peasant farmers commonly manage polycultures and/or agroforestry systems, their knowledge and practices could provide a valuable source of information for agriculture in times of climate change. It is important for scientists to work with farmers to preserve and enhance this indigenous knowledge. Restoring biodiversity also is the best strategy to resist disease and pests. Another remarkable example of productive and resilient polycultures innovated by farmers is described by Roger Leakey at James Cook University, Cairns, Australia [18]. This involves a three-point action plan to improve and rehabilitate marginal lands, many of which are unproductive or no longer suitable for agriculture.

#### Pesticide use constantly escalates – creates increasing toxicity and destroys agriculture

Picone and Tassel 2 [C. Picone and D. Van Tassel, 2002. Research Scientsist at the Land Institute and Professor and Chair of the Department of History at Case Western Reserve University. “Agriculture and Biodiversity Loss: Industrial Agriculture,” The Land Institute, http://www.landinstitute.org/vnews/display.v/ART/2002/08/23/439bd36c9acf1]

The U.S. Environmental Protection Agency estimates that 2 billion kg of pesticides are applied in the United States each year, and 10 billion are applied around the world. Use of synthetic pesticides increases our dependence on them in a process called the "pesticide treadmill." Insecticides and fungicides do not destroy only pests; they also kill their natural enemies. The natural enemies of insect pests include other insects that are parasites and predators, as well as pathogenic fungi. Pest species evolve resistance to pesticides much faster than their enemies, and thus pest populations quickly recover. Loss of natural enemies also leads to outbreaks of "secondary pests" — species that are not a problem until pesticides eliminate their natural enemies. As a result of pest resistance and secondary pest outbreaks, increasing amounts of pesticides must be applied, or more toxic chemicals must be developed. This is an arms race that we are losing. Despite the constant increase in pesticide use (Figure 1), loss of crops to insect pests was greater in 1989 (13 percent loss) than in 1945 (7 percent loss). Pesticides have impacts far beyond their target organisms. Scientists at Cornell University estimate that 67 million birds are killed each year in the United States from pesticides. Many individuals of some bird species have died after eating sprayed insects. Pesticides from agriculture flow into aquatic systems via runoff of surface water, soil erosion, and drainage into groundwater. Pesticide residues in streams, lakes, bays, and coral reefs kill aquatic plants and zooplankton (microscopic animals) that fish require for food. More directly, very low concentrations of pesticides in water have been shown to increase the mortality of young fish and amphibians. Pesticides and other toxins have an important effect on wildlife through "bioaccumulation." Certain kinds of pesticides are persistent — that is, they do not break down as they pass through the food chain. They can be taken up by small aquatic organisms and insects and are then passed on to the fish that eat them. Those fish are eaten by larger fish, which are eaten by predators such as eagles, pelicans, seals, and bears. The toxins become increasingly concentrated in the higher levels in this food chain, so top predators accumulate dangerous concentrations. The decline in the bald eagle population in the 1900s was linked to bioaccumulation of persistent pesticides, especially DDT (dichlorodiphenyltrichloroethane). Such toxins affect the eagles' nervous systems and cause their eggshells to become fatally thin. The use of DDT was banned in the United States in the 1970s, and eagles have since recovered. Today many persistent pesticides have been replaced by alternative chemicals that are more short-lived — but more acutely toxic.

#### Pesticides cause fertility decreases that results in extinction

WDP 97 [Western Daily Press, 10/6/1997. “Diana's gone all sari-eyed,”]

For new research claims that PMT - which is supposed to be due to drops in oestrogen levels - is a myth, it's all in the mind, just an excuse used by women when they have those perfectly normal random bouts of depression or irritability which men get too. Only men don't have a convenient hormonal syndrome they can blame. Oestrogen is clearly tricky stuff, for elsewhere, scientists are blaming it for the potential extinction of mankind. Oestrogen in the atmosphere - and the industrial chemicals and pesticides which mimic it - are, they say, causing increases in cancer and dramatic drops in fertility in males of many species, including humans. It could, indeed, wipe out the human race. We don't dispute the way high levels of testosterone can affect males, so how come people are so eager to deny that similar changes in oestrogen levels can make us women a bit tetchy at times? Surely if it's powerful enough to result in the destruction of planetary life, it's not unreasonable to think oestrogen might also cause a teensy- weensy bit of disturbance in women now and again?

#### Industrial ag uses phosphorous unsustainably – organic farming is key

Oliveira 11 [Caroline Felix Oliveira, Addressing the Phosphate Crisis: Precision Agriculture versus Agroecology, University of Florida Honor’s Thesis, 4/20/2011, pg. www.honors.ufl.edu/apps/Thesis.aspx/Download/945]

Industrial agriculture has jeopardized the availability of phosphate for future generations. Agriculture’s dependence on chemical fertilizers has directly impacted the sources of economically available phosphate, in turn affecting the balance of global P flow. These concerns have risen from the inefficiencies of our current system. Florida has been a significant contributor to the phosphate mining industry, but has suffered from rising global competition. As a result, this imminent crisis challenges the continuation of current agricultural practices, not only in Florida but world-wide. Despite the contentions towards sustainability, it has been successful in bringing to light the environmental and social concerns caused by industrial farming. IFM is a viable method to systematically implement sustainability through sustainable farm management. This approach can help restore global P flows by minimizing nutrient input and by maximizing nutrient recycling. Through this methodology, the integration of precision agriculture and agroecology combines the technology for minimal input and the natural processes for maximizing P recycling. Amidst the negativity that is associated with a crisis, there is still prosperity for positive outcomes. The positive outcome brought forth by is the potential to pressure research and development of alternative agricultural methods. The success of sustainable farming lies in the institutionalization of alternative agriculture as the standard for farming. This process may require additional incentives, markets or infrastructure for large scale implementation and increased public awareness of the crisis. During this transition, it is important to acknowledge that food is not just another commodity, but is deeply ingrained into a nation’s culture and the foundation for social wellbeing. Knowledge of the global P cycle must be interwoven in the fabric of society and integrated into food production, thus “ecologizing” the economy towards sustainable farm management.

#### The impact is famine and global phosphorus wars

Elser & White 10—Professor of Ecology @ Arizona State University & Director of the Institute for Sustainable Futures @ University of Technology [James Elser & Stuart White, “Peak Phosphorus,” Foreign Policy, April 20, 2010, pg. http://www.foreignpolicy.com/articles/2010/04/20/peak\_phosphorus?page=full]

From Kansas to China's Sichuan province, farmers treat their fields with phosphorus-rich fertilizer to increase the yield of their crops. What happens next, however, receives relatively little attention. Large amounts of this resource are lost from farm fields, through soil erosion and runoff, and down swirling toilets, through our urine and feces. Although seemingly mundane, this process cannot continue indefinitely. Our dwindling supply of phosphorus, a primary component underlying the growth of global agricultural production, threatens to disrupt food security across the planet during the coming century. This is the gravest natural resource shortage you've never heard of. The root of this problem has previously been the subject of presidential concern. In a message to Congress in 1938, U.S. President Franklin D. Roosevelt warned that the phosphorus content of American agricultural land "has greatly diminished." This shortage, Roosevelt warned, could cause low crop yields and poor-quality produce, detrimentally affecting "the physical health and economic security of the people of the nation." Phosphorus is used extensively for a variety of key functions in all living things, including the construction of DNA and cell membranes. As it is relatively rare in the Earth's crust, a lack of phosphorus is often the limiting factor in the growth of plants and algae. In humans, it plays an essential role in bone formation. Without a steady supply of this resource, global agricultural production willface abottleneck, and humankind's growing population will suffer a serious nutrition shortage. The world's reliance on phosphorus is an unappreciated aspect of the "Green Revolution," a series of agricultural innovations that made it possible to feed the approximately 4.2 billion-person increase in the global population since 1950. This massive expansion of global agricultural production required a simultaneous increase in the supply of key resources, including water and nitrogen. Without an increase in phosphorus, however, crops would still have lacked the resources necessary to fuel a substantial increase in production, and the Green Revolution would not have gotten off the ground. Roosevelt's warning was prescient and stimulated agricultural engineers to find an effective, albeit temporary, solution. To satisfy the world's growing food demand, they mobilized global mining efforts in ancient, phosphorus-rich marine deposits. By 2008, industrial farmers were applying an annual 17 million metric tons of mined phosphorus on their fields. Demand is expanding at around 3 percent a year -- a rate that is likely to accelerate due to rising prosperity in the developing world (richer people consume more meat) and the burgeoning bioenergy sector, which also requires phosphorus to support crop-based biofuels. Our supply of mined phosphorus is running out. Many mines used to meet this growing demand are degrading, as they are increasingly forced to access deeper layers and extract a lower quality of phosphate-bearing rock (phosphate is the chemical form in which nearly all phosphorus is found). Some initial analyses from scientists with the Global Phosphorus Research Initiative estimate that there will not be sufficient phosphorus supplies from mining to meet agricultural demand within 30 to 40 years. Although more research is clearly needed, this is not a comforting time scale. The geographic concentration of phosphate mines also threatens to usher in an era of intense resource competition. Nearly 90 percent of the world's estimated phosphorus reserves are found in five countries: Morocco, China, South Africa, Jordan, and the United States. In comparison, the 12 countries that make up the OPEC cartel control only 75 percent of the world's oil reserves.This fact could spark international tension and even influence how countries attempt to draw their internal boundaries. Many of Morocco's phosphate mines are in Western Sahara, a disputed independent territory that is occupied by Morocco and the site of growing international human rights concerns. Reflecting these concerns, U.N.-sanctioned export restrictions on phosphate and other resources are now in place, though the efficacy of the bans is incomplete. China, the country with the largest phosphorus reserves after Morocco, imposed a 135 percent tariff on the resource as part of 2008's complex series of events in which rising fuel and fertilizer costs led to rapid increases in food prices. The tariff effectively eliminated exports. Although the tariff was subsequently lifted as the 2008 food crisis faded, the imposition of this sort of trade barrier could become a regular occurrence as supplies dwindle worldwide. The United States has only 12 phosphorus mines. The supplies from the most productive mine, in Florida, are declining rapidly -- it will be commercially depleted within 20 years. The United States exported phosphorus for decades but now imports about 10 percent of its supply, all from Morocco, with which it signed a free trade agreement in 2004. The effects of this resource shortage will be felt long before the last phosphorus atom is extracted from the last mine. Increased demand for fertilizer and the decreased supply of phosphorus exports will result in higher prices, significantly affecting millions of farmers in the developing world who live on the brink of bankruptcy and starvation. Rising fertilizer prices could tip this balance. Already, signs are emerging that our current practices cannot continue for long. Between 2003 and 2008, phosphate fertilizer prices rose approximately 350 percent. In 2008, rising food prices sparked riots in more than 40 countries. Although the spike in fertilizer prices was only partially responsible for the higher food prices, the riots illustrate the social upheaval caused by disruptions to the world's food supply. The 2008 food riots were only stopped by government promises of food subsidies -- a viable strategy only as long as governments can afford the ever-increasing costs of food support. Establishing a reliable phosphorus supply is essential for assuring long-term, sustainable food security. We need to dramatically reduce the demand for phosphate rock by eliminating our wasteful practices. This will require a combination of low-tech and high-tech solutions, including efforts to prevent soil erosion, development of more-targeted methods of fertilizer application, and the creation of new, phosphorus-efficient crops, which produce a larger yield per phosphorus unit applied. Fortunately, unlike fossil fuels, phosphorus can be used over and over -- this is what occurs in natural ecosystems, where it is recycled innumerable times from its first mobilization from the Earth's crust to its eventual deposition into lake and ocean sediments. If we fail to meet this challenge, humanity faces a Malthusian trap of widespread famine on a scale that we have not yet experienced. The geopolitical impacts of such disruptions will be severe, as an increasing number of states fail to provide their citizens with a sufficient food supply. This dark scenario need not, however, be our fate. If we are successful in rising to the phosphorus sustainability challenge, as well as other aspects of sustainable agriculture, we can look forward to a future in which families, communities, and countries are healthy and secure in their nutrition and where all live in a world with cleaner rivers, lakes, and oceans.

#### *A shift solves global water crisis*

*Pretty 6—Professor of Environment and Society at University of Essex [Jules Pretty, Agroecological Approaches to Agricultural Development, Background Paper for the World Development Report 2008, November 2006]*

*Widespread appreciation of the `global water crisis’ recognizes that scarcity of clean water is affecting food production and conservation of ecosystems. By 2025 it is predicted that most developing countries will face either physical or economic water scarcity. Water diverted from rivers increased six fold between 1900 and 1995, far outpacing population growth. Increasing demand for fresh water now threatens the integrity of many aquatic ecosystems, and their associated environmental services. As agriculture accounts for 70% of current water withdrawals from rivers, so improving the productivity of water use in agriculture is a growing challenge. The potential for increasing food production while maintaining water-related ecosystem services rests on capacity to increase water productivity (WP), i.e. by realizing more kg of food per unit of water. Sustainable agricultural practices may do this by: i) removing limitations on productivity by enhancing soil fertility; ii) reducing soil evaporation through conservation tillage; iii) using more water efficient varieties; iv) reducing water losses to unrecoverable sinks; v) boosting productivity by supplemental irrigation in rainfed systems; and vi) inducing microclimatic changes to reduce crop water requirements (23). We calculated changes in WP for field crops in 144 projects from the data set (Table 5) based on reported crop yields and average potential evapotranspiration (ETp), for each project location during the relevant growing season. Actual evapotranspiration (ETa) was assumed to equal 80% of ETp, and ETa to remain a constant at different levels of productivity. Pg. 19*

#### *Water crises cause escalating global conflict*

*Rasmussen 11 [(Erik, CEO, Monday Morning; Founder, Green Growth Leaders) “Prepare for the Next Conflict: Water Wars” HuffPo 4/12] AT*

*For years experts have set out warnings of how the earth will be affected by the water crises, with millions dying and increasing conflicts over dwindling resources. They have proclaimed -- in line with the report from the US Senate -- that the water scarcity is a security issue, and that it will yield political stress with a risk of international water wars. This has been reflected in the oft-repeated observation that water will likely replace oil as a future cause of war between nations. Today the first glimpses of the coming water wars are emerging. Many countries in the Middle East, Africa, Central and South Asia -- e.g. Afghanistan, Pakistan, China, Kenya, Egypt, and India -- are already feeling the direct consequences of the water scarcity -- with the competition for water leading to social unrest, conflict and migration. This month the escalating concerns about the possibility of water wars triggered calls by Zafar Adeel, chair of UN-Water, for the UN to promote "hydro-diplomacy" in the Middle East and North Africa in order to avoid or at least manage emerging tensions over access to water. The gloomy outlook of our global fresh water resources points in the direction that the current conflicts and instability in these countries are only glimpses of the water wars expected to unfold in the future. Thus we need to address the water crisis that can quickly escalate and become a great humanitarian crisis and also a global safety problem. A revolution The current effort is nowhere near what is needed to deal with the water-challenge -- the world community has yet to find the solutions. Even though the 'water issue' is moving further up the agenda all over the globe: the US foreign assistance is investing massively in activities that promote water security, the European Commission is planning to present a "Blueprint for Safeguarding Europe's Water" in 2012 and the Chinese government plans to spend $600 billion over the next 10 years on measures to ensure adequate water supplies for the country. But it is not enough. The situation requires a response that goes far beyond regional and national initiatives -- we need a global water plan. With the current state of affairs, correcting measures still can be taken to avoid the crisis to be worsening. But it demands that we act now. We need a new way of thinking about water. We need to stop depleting our water resources, and urge water conservation on a global scale. This calls for a global awareness that water is a very scarce and valuable natural resource and that we need to initiate fundamental technological and management changes, and combine this with international solidarity and cooperation. In 2009, The International Water Management Institute called for a blue revolution as the only way to move forward: "We will need nothing less than a 'Blue Revolution', if we are to achieve food security and avert a serious water crisis in the future" said Dr. Colin Chartres, Director General of the International Water Management Institute. This meaning that we need ensure "more crop per drop": while many developing countries use precious water to grow 1 ton of rice per hectare, other countries produce 5 tons per hectare under similar social and water conditions, but with better technology and management. Thus, if we behave intelligently, and collaborate between neighbors, between neighboring countries, between North and South, and in the global trading system, we shall not 'run out of water'. If we do not, and "business as usual" prevails, then water wars will accelerate.*

#### And the industrial model causes massive hunger and can’t meet the needs of population growth – causes global famine and food wars

Headley 5/12 [(Joshua, founder of Deep Green Resistance environmental movement) “BREAKDOWN: Industrial Agriculture” Deep Green Resistance May 12 2013] AT

In no other industry today is it more obvious to see the culmination of affects of social, political, economic, and ecological instability than in the global production of food. As a defining characteristic of civilization itself, it is no wonder why scientists today are closely monitoring the industrial agricultural system and its ability (or lack thereof) to meet the demands of an expanding global population. Amidst soil degradation, resource depletion, rising global temperatures, severe climate disruptions such as floods and droughts, ocean acidification, rapidly decreasing biodiversity, and the threat of irreversible climatic change, food production is perhaps more vulnerable today than ever in our history. Currently, as many as 2 billion people are estimated to be living in hunger – but that number is set to dramatically escalate, creating a reality in which massive starvation, on an inconceivable scale, is inevitable. With these converging crises, we can readily see within agriculture and food production that our global industrial civilization is experiencing a decline in complexity that it cannot adequately remediate, thus increasing our vulnerability to collapse. Industrial agriculture has reached the point of declining marginal returns – there may be years of fluctuation in global food production but we are unlikely to ever reach peak levels again in the foreseeable future. While often articulated that technological innovation could present near-term solutions, advocates of this thought tend to forget almost completely the various contributing factors to declining returns that cannot be resolved in such a manner. There is also much evidence, within agriculture’s own history, that a given technology that has the potential to increase yields and production (such as the advent of the plow or discovery of oil) tends to, over time, actually reduce that potential and significantly escalate the problem. Peak Soil A largely overlooked problem is soil fertility. [1] A civilization dependent on agriculture can only “sustain” itself and “progress,” for as long as the landbase and soil on which it depends can continue to thrive. The landscape of the world today should act as a blatant reminder of this fact. What comes to mind when you think of Iraq? Cedar forests so thick that sunlight never touches the ground? “The Fertile Crescent,” as this region is also known, is the cradle of civilization and if we take a look at it today we can quickly deduce that overexploitation of the land and soil is inherent to this way of life. The Sahara Desert also serves as a pressing example – a region once used by the Roman Empire for food cultivation and production. But this problem has not escaped our modern industrial civilization either, even despite some technological advances that have been successful at concealing it. The only thing we have genuinely been “successful” at is postponing the inevitable. Currently, industrial agriculture depletes the soil about a millimeter per year, which is ten times greater than the rate of soil formation. Over the last century, we have solved this problem by increasing the amount of land under cultivation and by the use of fertilizers, pesticides, and crop varieties. Industrial civilization has expanded so greatly, however, that we currently already use most of the world’s arable land for agriculture. To solve the problems of peak soil today, as we have previously, would require doubling the land currently used for cultivation at the cost of some of the worlds last remaining forests and grasslands – most notably the Amazon and the Sahel. Not only is this option impractical, given the current state of the climate, it is wholly insane. Another problem we face today is that more than a half-century of reliance on fertilizers and pesticides has severely reduced the level of organic matter in the soil. An advance in chemical fertilizers and/or genetic engineering of crops, while promising boosted yields in the near-term, will only further delay the problem while at the same time possibly introducing even greater health risks and other unforeseen consequences. Decreasing Yields & Reserve Stocks According to an Earth Policy Institute report in January, global grain harvests and stocks fell dangerously low in 2012 with total grain production down 75 million tons from the record year before. [2] Most of this decrease in production occurred as a result of the devastating drought that affected nearly every major agricultural region in the world. The United States – the largest producer of corn (the world’s largest crop) – has yet to fully recover from the drought last year and this is a cause for major concern. Overall, global grain consumption last year exceeded global production requiring a large dependence on the world’s diminishing reserve stocks. And this isn’t the first time it has happened – 8 out of the last 13 years have seen consumption exceed production. In an escalating ecological crisis this is likely to be the new “normal.” This fact, in itself, is a strong indication that industrial civilization is dangerously vulnerable to collapse. The issue here is two-fold: resource scarcity (industrial agriculture requires fossil fuels in every step of the process), soil degradation, and climate disruptions (droughts, floods, etc.) are severely reducing the yields of industrial agriculture; at the same time (and precisely because of those facts), we are becoming increasingly reliant on carryover reserve stocks of grains to meet current demands thus creating a situation in which we have little to no capacity to rebuild those stocks. As Joseph Tainter describes in The Collapse of Complex Societies, a society becomes vulnerable to collapse when investment in complexity begins to yield a declining marginal return. Stress and perturbation are common (and constant) features of all complex societies and they are precisely organized at high levels of complexity in order to deal with those problems. However, major, unexpected stress surges (which do occur given enough time) require the society to have some kind of net reserve, such as excess productive capacities or hoarded surpluses – without such a reserve, massive perturbations cannot be accommodated. He continues: “Excess productive capacity will at some point be used up, and accumulated surpluses allocated to current operating needs. There is, then, little or no surplus with which to counter major adversities. Unexpected stress surges must be dealt with out of the current operating budget, often ineffectually, and always to the detriment of the system as a whole. Even if the stress is successfully met, the society is weakened in the process, and made even more vulnerable to the next crisis. Once a complex society develops the vulnerabilities of declining marginal returns, collapse may merely require sufficient passage of time to render probable the occurrence of an insurmountable calamity.” [3] Current global reserve stocks of grains stand at approximately 423 million tons, enough to cover 68 days of consumption. As population and consumption levels continue to rise while productive capacities fall, we will be more and more dependent on these shrinking reserves making our ability to address future stresses to the system significantly low. Disappearance of the Arctic Sea Ice One such “insurmountable calamity,” may be quickly on the horizon. This week, senior US government officials were briefed at the White House on the danger of an ice-free Arctic in the summer within two years. One of the leading scientists advising the officials is marine scientist Professor Carlos Duante, who warned in early April: “The Arctic situation is snowballing: dangerous changes in the Arctic derived from accumulated anthropogenic green house gases lead to more activities conducive to further greenhouse gas emissions. This situation has the momentum of a runaway train.” [4] Over the last few years, the excessive melting occurring in the Arctic region due to rising global temperatures has altered the jet stream over North America, Europe, and Russia leading to the very unprecedented heat waves and droughts responsible for most of the declining returns in agricultural production in recent years. As the warming and melting continue, these extreme weather events will exponentially get worse. In addition, the melting of the sea ice will significantly raise sea level with the potential to displace more than 400 million people. The UK-based Arctic Methane Emergency Group recently released a public statement also indicating: “The weather extremes from last year are causing real problems for farmers, not only in the UK, but in the US and many grain-producing countries. World food production can be expected to decline, with mass starvation inevitable. The price of food will rise inexorably, producing global unrest and making food security even more of an issue.” [5] Social, Political, and Economic Instability No civilization can avoid collapse if it fails to feed its population, largely because continued pressures on the system will result in the disintegration of central control as global conflicts arise over scarce necessities. [6] This process can occur rapidly and/or through a gradual breakdown. A likely scenario of rapid collapse would be the breakout of a small regional nuclear war – such as between Pakistan and India – which would create a “nuclear winter” with massive global consequences. If that could be avoided, then the threat of collapse will likely be more gradual through the continued decrease of marginal returns on food and essential services. As these crises continue to increase in frequency and severity, their convergences will usher in a period of prolonged global unrest. [7] This was directly seen as a result of the 2007-08 grain crisis in which many countries restricted exports, prices skyrocketed, and food riots broke out in dozens of countries. Many of those countries were located within the Middle East and are credited as the fundamental circumstances that gave way to the Arab Spring in 2011. This year the food price index is currently at 210 – a level believed to be the threshold beyond which civil unrest is probable. Further, the UN’s Food and Agriculture Organization is already reporting record high prices for dairy, meat, sugar and cereals and also warns – due to the reduced grain stocks from last year’s droughts – that prices can be expected to increase later this year as well. Another factor driving up the costs of food is the price of oil. Because the entire industrial agriculture process requires the use of fossil fuels, the high price of oil results in a corresponding rise in the price of food. The future of oil production and whether we have reached “peak oil” may still be a matter of contention for some, but the increasing reliance on extreme energy processes (tar sands, hydraulic fracturing, mountaintop removal, etc.) is a blatant indication that the days of cheap petroleum are over. This implies that costs for energy extraction, and therefore the price of oil and food, will only continue to rise dramatically in the foreseeable future. As the struggle for resources and security escalates, governments around the world will rely more heavily upon totalitarian forms of control and reinforcement of order, especially as civil unrest becomes more common and outside threats with other countries intensify. However, this is also likely to be matched by an increase in resistance to the demands of the socio-political-economic hierarchies. Emerging Alternatives As system disruptions continue to occur and food and other essential resources become scarcer, remaining populations will have to become locally self-sufficient to a degree not seen for several generations. The need for restructuring the way in which our communities have access to food and water is greater now than perhaps ever before – and there are more than a few examples being built around the world right now. A few weeks ago, I had the privilege of hearing a presentation at the Ecosocialist Conference in NYC on precisely these alternatives. Speaking on a panel entitled “Agriculture and Food: Sustainable or Profitable?” was David Barkin, a Distinguished Professor at the Universidad Autonoma Metropolitana in Mexico City, who has been collaborating with thousands of communities in Mexico and Latin America involved in constructing post-capitalist societies. [8] In his presentation he spoke greatly about local groups – comprising of 30,000-50,000 people each, together being more than 130 million people – throughout Mexico and Latin America that are rebuilding their societies based on five principles that were written by the communities themselves and then systematized. Self-management; through a process of participatory democracy Solidarity; through rejecting the notion of wage-labor and re-organizing the entire work process Self-sufficiency; which includes contacts and exchanges between many organizations so that you are not limited to the resource or climate-base of a single community but a development of trade networks Diversification Sustainable regional resource management; most communities in Mexico and Latin American define a region based on the natural definition of watersheds, although that may not be the most applicable natural definition in other parts of the world He also spoke of groups such as the EZLN as examples of groups building alternative models – not models that are working at a super-structural level to change government policy, but models that give power and control directly to the community for the purposes of self-sufficiency and sustainability. In Peru, Bolivia, and Ecuador there is a phrase “El Buen Vivir” or “Sumak Kawsay,” – a cosmology that is said to come from indigenous cultures – that is actually informing how communities are rebuilding. It is proposed to promote sustainable relationships with nature and for communities to be less consumerist. In addition to radically rebuilding our communities so that they exist not only wholly independent from industrial agriculture but also in harmony with the natural world, we need to build a greater resistance movement against industrial infrastructure that continues to threaten the very possibility of people all over the world from taking these steps. Mining and its infrastructure, which is required for the development of solar panels and wind turbines, uses gigantic volumes of water for it to work. Because of this, in many parts of Mexico (where North American mining companies currently have concessions on 40% of the country’s land area) and Latin America, mining is a question of taking water away from agriculture. The struggle against mining is not just a struggle against environmental destruction, but it is a struggle for food. The same can be said of foreign investments in wind turbine farms in Mexico and Puerto Rico, where local communities actually oppose these “renewable energy” infrastructures because they not only degrade the environment but also because it steals land that might otherwise be used for the direct needs of the locality. Those of us in the most developed and industrialized nations need to radically alter our conceptions of sustainability and what is possible – a process that should be guided and influenced by those currently most vulnerable. Many well-meaning activists in the West tend to take perspectives that never really question our own standard of living – a standard of living David Barkin so rightfully articulated as an abomination. We tend to favor “green energy” projects and the further development and industrialization of the “Global South” so that we don’t fundamentally have to make any sacrifices ourselves. Embedded in these perspectives are the racist and colonialist ideas that less developed countries in the world either don’t know what they want or don’t have the ability to create what they want themselves and thus need the technology and advances of the West to save them. David Barkin’s presentation was a blatant reminder that this is far from the truth. Right now, in Mexico and Latin America, there are communities directly involved in building their own alternatives. And these aren’t communities of just a few hundred people; these aren’t small, insignificant projects. These are communities as large as 50,000 people each – an entire network of more than 130 million people – directly struggling and fighting for a radically different future. We have much to learn and our time is running out. As industrial agriculture’s ability to produce food for the global population continues to decline, our resistance and our alternatives must escalate in lockstep – and there’s no reason for us to continue to ignore the alternative models and successes of our brothers and sisters in the rest of the world

#### Also forces small farmers off their land, driving deforestation of the Amazon

Tocatins 9 [(Alan Fernandes Tocantins, Graduated in Business Administration from the University of Rio Verde (1996) and the Environmental Management Birkbeck College, University of London (2008). Master in Geographic Information Science by Birkbeck College, University of London (2010) with emphasis on Geographic Information System and Remote Sensing. Professor at the University of Cuiabá and Ibero American College - Cuiabá – MT) “The social and environmental impacts of industrial agriculture in the Legal Amazon” 14th Symposium on Remote Sensing, p 159-164] AT

The spatial patterns of deforestation have changed over the last decades and so have the rate in which they occur. However, current deforestation has concentrated in what has been defined as the Arc of Deforestation (Fig 1), where clearing of forests has been stimulated by land speculation, and more recently, increased by the production of export commodities such as soybeans and beef. Brazil is one of the few countries in the world to possess large areas of unoccupied land that could be farmed [4], making it the world’s last agricultural frontier. With the growing participation in the globalized world market, the expansion of these agricultural frontiers has become inevitable. This paper attempts to present a review of recent literature of the main drives of deforestation in the Amazon, focusing on the advance of cultivation of soybeans and transport infrastructure in the region. The expansion of cattle ranching into the Amazon and, more recently, soybean production in the agriculture frontier has not contributed to reduce social and economic inequality in the population. The consolidation of large farms and ranches means that small farmers do not stand a chance in the share on the appropriation of the increasing values of these lands [15]. Their options are either to try a new life in rapidly growing urban centres throughout the Amazon, or invade new lands and prepare them for more profitable investments [2]. The present study focus on the idea that, in contrast to other land-use conversions in recent years (e.g. land speculation, tenure or domestic markets), one of the main factors indirectly driving deforestation today is the advance of soybeans into the agriculture frontier of the Amazon, which has been regulated by the international market. Soybean planters might not cut the forest themselves, but they increased the pressure on small farmers to sell their land and move to frontiers areas and clear more [14]. 3. Impacts of large scale agriculture: the case of Mato Grosso Helped by government’s rural subsidies, transport facilitations for the outputs and intensive agricultural research to overcome low fertility of tropical soils [17], the agricultural production expanded from the south towards the vast Brazilian Cerrado. It is estimated that out of the 86 million tons of soy produced in Brazil (harvest 2006/2007, EMBRAPA [8]) over 15 per cent comes from the crop barren soils of the Legal Amazon region [9], with the state of Mato Grosso as the biggest producer in Brazil. However, in order to strengthen their activities, 161 large-scale farmers have induced smaller farmers to sell their land and move to new frontiers deeper into the forest and clear more land; a dynamic that has also led to the displacement of small farmers to urban areas, worsening the social problems, such as unemployment, crime and segregation [38]. Land use in Mato Grosso has been characterized by a dominant pattern of forest conversion that started with small scale exploration for timber, mining and subsistence agriculture [17]. The consolidation of land use into large-scale ranching soon followed, and although cropland expansion has occurred mostly in areas already cleared in previous activities, this new configuration of land use in Mato Grosso has had important effects both socially and environmentally in the region. At the southern tip of the Legal Amazon, deforestation has intensified (Fig. 3) as a result of the arrival of small farmers, displaced from their land now occupied by large-scale croplands, and the dominance of cattle ranching. Although extensive cropland does not contribute directly to most deforestation itself, it seems to be the driving force behind the process. The maps presented on Figure 4 (below) shows the reconfiguration of agriculture and ranching in Mato Grosso over time, presented separately at a municipality level. The production of soybean has intensified and concentrated particularly in the central and southern parts of the state, as a result of consolidation of large agricultural enterprises. However, the map on bottom left shows how soybean production has intensified in those regions. As a consequence, cattle ranching, which was concentrated at southern Mato Grosso in 1990 (top right map) has rapidly expanded to the Amazon frontier in the north (bottom right map). 3.1 Case study: Alta Floresta Located at the border with Pará state, 830 km north from Cuiabá (capital of Mato Grosso state), Alta Floresta is situated at 09˚52’ S; 56˚06’ W, with 8,947 km² [9]. Out of the 36 municipalities that most contributed to the deforestation in the Amazon region in 2007, 19 of them are in the Mato Grosso state, including Alta Floresta [5 and 12]. INPE [5] estimates that 38 per cent of total Amazonia deforestation over 1999-2003 occurred in Mato Grosso, and that 5.6 per cent of remaining Mato Grosso cerrado were deforested between 1998 and 2002 [15]. Logging and deforestation in Alta Floresta, as a by-product of ranching, have intensified as a result of the dominance of technically advanced and highly mechanized cultivation of soybeans that today occupies 5,125 million hectares [8] of land use in other parts of Mato Grosso – around 25 per cent of the Brazil’s total soy planted area [8]. Conservation efforts, such as the creation of the State Parks Cristalino I and II proved to be an efficient way to protect the remaining fragmented forests. But even areas of conservation have been overwhelmed by the destructive trends of ranching-agriculture [18]. The reduction is a setback in the regional conservation strategy, built on the conventional emphasis on parks, indigenous or extractivist reserves. Under funded and understaffed conservation areas also suffer from weak implementation of environmental legislation and law enforcement. Moreover, in Brazil it is not unusual for illegal deforestation to involve public servants, such as environmental agents in massive corruption schemes with timber companies or traders [15]. 5. Conclusion This study has focused in both expansion of the agriculture frontier as one of the main ultimate factors contributing to the current rates of deforestation in the Legal Amazon. The state of Mato Grosso, and more specifically the region of Alta Floresta, has been chosen as areas of interests, because of factors that make this region on of the most dynamic agricultural frontiers in the Amazon. These factors include a whole reconfiguration of the agriculture in Mato Grosso, which has led to the movement of both urban and rural populations to the Amazon frontier. The social, economic and environmental effects this movement has brought about have been analysed combining social-economic census, satellite based and spatially referenced data, as well as extensive review of the literature available. I found that, even though the expansion of large scale agriculture is not directly a factor of deforestation itself, it has become an important additional actor in the process, for inducing smaller farmers into new forested agricultural frontiers.

#### Habitat loss in the Amazon causes extinction.

Howard 11 [(lead of Ecosystem Service and Poverty Alleviation Project, Wageningen Univ. Department of Social Sciences Faculty) “Tipping Points and Biodiversity Change: Consequences for Human Wellbeing and Challenges for Science and Policy” Draft Prepared for the Kavli Seminar“Addressing Global Tipping Points”13-15 March 2011] AT

In the 20 th century, we became aware that the fate of biodiversity and the fate of humans are intimately interconnected. Before this, only some religions (and a few philosophers) predicted the end of life onEarth or human extinction through different versions of Armageddon, which was generally caused by thedivine consequences of wayward human behaviour. Darwin’s theory of evolution provided the means to un-derstand continual species extinctions, and scientists began to unearth the evidence of previous mass extinc-tions. However, the idea that extinction might extend to the human species was not taken up until the 20 th century, when it was argued that all species invariably become extinct (Raup 1991). Scientists came to un-derstand that the human species could disappear through catastrophic natural events, much as the dinosaursdisappeared, as a result of bolide impacts or large-scale volcanism. A secular concept of self-annihilationemerged less than 50 years ago with the spectre of global nuclear holocaust, which would also render muchother life on Earth unviable (see e.g. Robock et al. 2007), and where the life that remained would be distinct-ly antithetical to humans. Many now argue that there are other catastrophic threats to the human species,some of which threaten life on Earth more generally (Rees 2003, Posner 2004, Bostrom & Cirkovic 2008,Al-Rodhan 2009). We can only speculate whether the sixth mass extinction of species that appears to be un-derway has implications for the continued evolution of the human species, but we do know that it is the syn-ergies and feedbacks between global environmental change and biodiversity change, combined with mala-daptive human responses to that change (e.g. global nuclear conflict; unintended effects of technological re-sponses), that leads to the most catastrophic scenarios.Critical questions that arise when considering biodiversity change, the threats that it poses to humanwellbeing, and the challenges that it presents for mitigation and human adaptation, are whether there are crit-ical thresholds or ‘tipping points’ related to biodiversity change, and whether such tipping points can lead or contribute, directly or indirectly to global tipping points or whether they ‘only’ have implications at local or regional scales. If there are such tipping points, what types of implications do they have for human wellbe-ing? For whom, where, and when? Further, can such tipping points be avoided, and are we prepared to dealwith (adapt to) them if they cannot?With biodiversity change, there are a number of vulnerabilities to which the majority of the globe’s human population are exposed not only because they are impacted by this change at local level, but also because even local changes can have global repercussions due of global interdependencies. One is the rapidemergence and transmission of new infectious diseases and pests that both threaten plants and animals (and thus the humans that depend upon them), as well as humans directly (e.g. Chivian & Bernstein 2008, Pong-siri et al. 2009, Keesing et al. 2010, Sharma 2010). A second is invasive species, where species disperse be-yond their ‘normal’ range, invade many different regions on different continents, affecting the invaded eco-systems in highly unpredictable ways (e.g. GISP n.d., Walther et al. 2009, Perrings et al. 2010). Both maycontribute strongly to a third such vulnerability, which is addressed here, presented by tipping points that may emerge at regional scale, such as the loss of the Amazon rainforest or the collapse of coral reefs, that can have extra-regional or even global repercussions not only due to the loss of species and ecosystems, but as well due to the loss of some of the ecosystem services that these provide e.g. as CO 2 sinks, which creates synergies with phenomena such as climate change and ocean acidification. Finally, the fourth vulnerability is posed by human maladaptation to any of these dynamics, where maladaptation can exacerbate biodiversity change and can lead to other negative effects for human welfare and ecosystems. Conflict over dwindling biological resources and ecosystem services is likely to become pervasive, and conflict over the understand-ing of the causes and effects of such change are likely to be just as serious. The global security implications of climate change are of great concern and are being assessed (e.g. GACGC 2007) but, to our knowledge, no such assessment exists for biodiversity change. Many of the global, regional, and national institutions that inthe past have evolved to manage human-biodiversity relations have so far been shown to be relatively inef-fective in stemming biodiversity loss (see e.g. CBD 2010) and thus they are likely to be even more ineffec-tive in dealing with surprises or with the large-scale repercussions of the loss of benefits, e.g. of food, andnew institutions will have to emerge if such threats are not to translate into local, regional, and even global,catastrophe. I argue that to successfully adapt to tipping points requires major changes in values, priorities, andinstitutions, particularly economic institutions: some of this change may be forthcoming but much is unlikelyto change quickly or profoundly enough to avoid such tipping points. A first step is to recognise the implica-tions of biodiversity change and potential tipping points for human wellbeing, which is currently impeded bycultural, cognitive and political barriers. A second is to prepare for such change, and a third is to prepare po-tential responses. II. Biodiversity Change and Tipping PointsA. Types, magnitudes and drivers of biodiversity change Aside from numerous potential sources of global catastrophe that could have such implications for life onEarth, we also find ourselves in a period when rates of species extinctions are estimated at 50-500 times background, which is the highest rate in the past 65 million years. The effects of ongoing rapid decline of biomes and homogenisation of biotas have been summarised as:changes in species geographic ranges, genetic risks of extinction, genetic assimilation, naturalselection, mutation rates, the shortening of food chains, the increase in nutrient-enriched nich-es permitting the ascendancy of microbes, and the differential survival of ecological general-ists. Rates of evolutionary processes will change in different groups, and speciation in thelarger vertebrates is essentially over…Whether the biota will continue to provide the dependa- ble ecological services humans take for granted is less clear…Our inability to make clearer predictions about the future of evolution has serious consequences for both biodiversity andhumanity (Woodruff 2001: 5471).The consequences for biodiversity and humanity depend in part on the timescale in reference. Some scien-tists argue that the Earth’s sixth extinction has already arrived, where an estimated loss of over 75% of spe-cies can be expected, possibly within 250 to 500 years (Barnosky et al. 2011), although others highlight thefact that projections of species extinction rates are controversial (Pereira et al. 2010). A mass extinction hardly bodes well for humans given the changes in the biosphere, in biomes and ecosystems, the associated pestand disease outbreaks, etc. that are associated with the different drivers of biodiversity change and the possi- ble critical thresholds or tipping points discussed below and in other papers presented here. Thus, the impli-cations of what is laid out below are magnified many fold and their effects become increasingly synergisticover time – 500 years is a very short period when we consider that Homininae appeared 8 million years ago, Homo sapiens 500,000 years ago, and modern humans 200,000 years ago – effectively, it constitutes only.25% of modern human history. Were humans to have a council of elders to deliberate the impact of our ac-tivities on future generations, it would certainly be extraordinarily alarmed and calling for radical transfor-mations as, indeed, are many scientists today.What is extraordinary about this possible 6 th extinction of species is that, since it is human-induced,it is not inevitable and depends, for example, on rates of climate and land-use change (Pereira et al. 2010).For the first time in the Earth’s history, a species is actually in a position to change the course of evolutionwrit large (Western 2001). This is reflected in the range of projected changes in biodiversity, which is very broad both because ‘there are major opportunities to intervene through better policies, but also because of large uncertainties in projections’ (Pereira et al. 2010: 1496). The possibilities and constraints to doing so arediscussed below and in other papers. Many scientists consider that the probability that we will change thecourse that evolution is currently on is low or very low without radical and immediate transformations invalues, knowledge, behaviour, markets, and governance. 3The causes of species extinctions and related change in biodiversity and ecosystem services can becharacterised as ‘synergistic stressors’ – climatic change coupled with ‘abnormally high ecological stressors’and ‘unusual interactions’ (e.g. between human-induced climate change, habitat fragmentation, pollution,over-harvesting, invasive species, pathogens and, some would add, the ‘expanding human biomass’ (Bar-nosky et al. 2011) although one could just as easilyadd ‘the expanding livestock biomass’ or ‘expanding biofuels production’)(Steinfeld et al. 2010, Wise et al.2009). Beyond this, humans have had a massive im- pact on the productivity, composition, and diversity of terrestrial ecosystems by changing the rates of supplyof major nutrients (nitrogen, phosphorus, and atmos- pheric CO 2 ), changing regional fire frequencies, [and]relaxing biogeographic barriers to species dispersal’(Tilman & Lehman 2001: 5433).Many human-dominated ecosystems are char-acterised by high natural resource extraction, shortfood chains, food web simplification, habitat and land-scape homogeneity, heavy use of petrochemicals andfossil fuels, convergent soil characteristics, modifiedhydrological cycles, reduced biotic and physical dis-turbance regimes, and global mobility of people, goodsand services (Western 2001) which give rise to theeffects in Box 1. In sum, humans are currently ‘appro- priating more than a third of all terrestrial primary production and, in so doing, have simplified or de-stroyed large portions of some types of ecosys-tems…many human environmental impacts are pro- jected to be two to three times stronger within 50years’ (Tilman & Lehman 2001: 5433). Notwithstand-ing their global significance, and not all human-dominated ecosystems are the same, not all humansare having the same impacts on biodiversity and eco-systems, which will also be taken up again below.According to the Millennium Ecosystem As-sessment (MEA) (Mace et al. 2005), at present habitatchange and fragmentation are the most important drivers of species extinctions, whereas invasive species andover-exploitation are the next most common, and disease, climate change, and pollution follow these in im- portance. Until recently, scientists generally agreed that species extinctions are principally due to habitat change and fragmentation, where it is human-induced land use changes such as agricultural expansion and especially tropical deforestation that have been the most important drivers, particularly since species richness is highest in tropical forests. As a result, most conservation activity has focused on reducing habitat loss andits impacts (Lewis 2006). Nevertheless, the major drivers of change in biodiversity vary per ecosystem type(Mace et al. 2005). For example, in tropical forests, habitat change has had a very high impact on biodiversi-ty over the past 100 years, followed by over-exploitation, whereas climate change, invasive species, and pol-lution have played minor roles. This is not the case in boreal forests, where nitrogen and phosphorus pollu-tion have been the major drivers.Since about the 1990s, however, there has been growing evidence that climate change is both interact-ing with these drivers and increasingly as a driver of biodiversity change in and of itself, to the point wheremost experts now agree that climate change will surpass habitat loss and fragmentation as the principle driv-er of species extinctions (Hannah et al. 2005, Thomas 2004, van Vuuren 2006). Climate change is not onlyincreasingly driving species extinctions: it also affects species composition in any given ecosystem throughchanges in range (distribution) of species, changes in timing of reproductions, and changes in the length of the growing season for plants (CBD 2007 and below). Today, scientists consider that it is the synergy be-tween habitat change and fragmentation and climate change that is the most threatening to biodiversity, giv-en that habitat loss and fragmentation can prohibit species from migrating and colonising new areas in re-sponse to climate change (Lovejoy & Hannah 2005).

#### **We should view ourselves as continuous with the environment – this creates an ethical obligation to protect the environment**

Rowe 96 — Stan Rowe, Professor Emeritus at the University of Saskatchewan, 1996 (“From Shallow To Deep Ecological Philosophy,” *Trumpeter*, Volume 13, Number 1, Available Online at http://trumpeter.athabascau.ca/index.php/trumpet/article/view/278/413)

Organisms can be “alive” one moment and “dead” the next with no quantitative difference. The recently deceased organism has lost none of its physical parts yet it lacks “life”—an unknown quality of organization (perhaps that mystery called “energy?”) but not the organization itself. A still stronger reason exists for not equating “life” and “organisms.” The latter only exhibit “aliveness” in the context of life-supporting systems, though curiously the vitality of the latter has mostly been denied. By analogy, it is as if all agreed that only a tree trunk’s cambial layer is “alive” while its support system—the tree’s bole and roots of bark and wood that envelops and supports the cambium—is “dead.” Instead we perceive the whole tree as “alive.” The separation of “living” organisms from their supportive but “dead” environments is a reductionist convention that ecology disproves. Both organic and inorganic are functional parts of enveloping ecosystems, of which the largest one accessible to direct experience is the global ecosphere. To attribute the organizing principle “life” to Earth—to the ecosphere and its sectoral aquatic and terrestrial ecosystems—makes more sense than attempting to locate it in organisms per se, divorced from their requisite milieus. The aquatic ecologist Lindeman (1942) who pioneered examination of lakes as energetic systems adopted the ecosystem concept because of the blurred distinction between “living” and “dead” in the components of the Minnesota lakes he studied. The Biological Fallacy, equating organisms with life, is the result of a faulty inside-the-system view (Rowe 1991). Pictures of the blue-and-white planet Earth taken from the outside are intuitively recognized as images of a living “cell.” Inside that “cell,” cheated by sight, people perceive a particulate world separable into important and unimportant parts: the “organic” and the “inorganic,” “biotic” and “abiotic,” “animate” and “inanimate,” “living” and “dead.” Religions, philosophies and sciences have been constructed around these ignorant taxonomies, perpetuating the departmentalization of a global ecosystem whose “aliveness” is as much expressed in its improbable atmosphere, crustal rocks, seas, soils and sediments as in organisms. When did life begin? When did any kind of creative organization begin? Perhaps when the ecosphere came into existence. Perhaps earlier at time zero and the Big Bang. Important human attitudes hinge on the idea of life and where it resides. If only organisms are imbued with life, then things like us are important and all else is relatively unimportant. The biocentric preoccupation with organisms subtly supports anthropocentrism, for are we not first in neural complexity among all organisms? Earth has traditionally been thought to consist of consequential entities—organisms, living beings—and their relatively inconsequential dead environments. What should be attended to, cared for, worried about? The usual answer today is “life” in its limited sense of “organisms,” of biodiversity. Meanwhile sea, land and air—classified as dead environment—can be freely exploited. In the reigning ideology as long as large organisms are safeguarded, anything goes. We demean Earth by equating “life” and “organisms,” then proving by text-book definition that Earth is dead because not-an-organism. In this way mental doors are barred against the idea of liveliness everywhere. Certainly Earth is not an organism, nor is it a super organism as Lovelock has proposed, any more than organisms are Earth or mini-Earth. The planetary ecosphere and its sectoral volumetric ecosystems are SUPRA-organismic, higher levels of integration than mere organisms. Essential to the ecocentric idea is assignment of highest value to the ecosphere and to the ecosystems that it comprises. Note the use of “ecosphere” rather than “biosphere,” the latter usually defined as a “life-filled” (read “organism-filled”) thin shell at Earth’s surface. The meaning of “ecosphere” goes deeper; it is Earth to the core, comprising the totality of gravity and electro-magnetic fields, the molten radioactive magma that shifts the crustal plates, vulcanism and earthquakes and mountain building that renew nutrients at the surface, the whole dynamic evolving “stage” where organisms play out their many roles under the guidance of the larger whole, shaped at least in part by the “morphic fields” of the living Gaia (Sheldrake 1991:162). In different times and places the source of life has been attributed to the air, to soil, to water, to fire, as well as to organisms. As with the blind men touching the elephant, each separate part has been the imagined essential component of the whole Earth. Now that the planet has been conceptualized as one integrated entity, can we not logically attribute the creative synthesizing quintessence called “life” to it, rather than to any one class of its various parts? When life is conceived as a function of the ecosphere and its sectoral ecosystem the subject matter of Biology is cast in a bright new light. The pejorative concept of “environment” vanishes. The focus of vital interest broadens to encompass the world. Anthropocentrism and biocentrism receive the jolting shock they deserve. The answer as to where our preservation emphasis should center is answered: Earth spaces (and all that is in them) first, Earth species second. This priority guarantees no loss of vital parts. The implications of locating animation where it belongs, of denying the naive “Life = Organisms” equation, are many. Perhaps most important is a broadening of the Schweizerian “reverence for life” to embrace the whole Earth. Reverence for life means reverence for ecosystems. We should feel the same pain when the atmosphere and the seas are poisoned as when people are poisoned. We should feel more pain at the destruction of wild ecosystems, such as the temperate rain forest of the West Coast, than at the demise of any organism, no matter how sad the latter occasion, because the destruction of ecosystems severs the very roots of evolutionary creativity.

#### Food scarcity – and specifically land grabs by industrial ag companies – creates structural conditions that guarantee massive global conflict and global injustice

Brown 11 – (Lester R. is the President of the Earth Policy Institute, “The New Geopolitics of Food,” May 2011, <http://www.foreignpolicy.com/articles/2011/04/25/the_new_geopolitics_of_food?page=full>, Accessed Date: 3-15-13 y2k

The potential for conflict -- and not just over water -- is high. Many of the land deals have been made in secret, and in most cases, the land involved was already in use by villagers when it was sold or leased. Often those already farming the land were neither consulted about nor even informed of the new arrangements. And because there typically are no formal land titles in many developing-country villages, the farmers who lost their land have had little backing to bring their cases to court. Reporter John Vidal, writing in Britain's Observer, quotes Nyikaw Ochalla from Ethiopia's Gambella region: "The foreign companies are arriving in large numbers, depriving people of land they have used for centuries. There is no consultation with the indigenous population. The deals are done secretly. The only thing the local people see is people coming with lots of tractors to invade their lands." Local hostility toward such land grabs is the rule, not the exception. In 2007, as food prices were starting to rise, China signed an agreement with the Philippines to lease 2.5 million acres of land slated for food crops that would be shipped home. Once word leaked, the public outcry -- much of it from Filipino farmers -- forced Manila to suspend the agreement. A similar uproar rocked Madagascar, where a South Korean firm, Daewoo Logistics, had pursued rights to more than 3 million acres of land. Word of the deal helped stoke a political furor that toppled the government and forced cancellation of the agreement. Indeed, few things are more likely to fuel insurgencies than taking land from people. Agricultural equipment is easily sabotaged. If ripe fields of grain are torched, they burn quickly. Not only are these deals risky, but foreign investors producing food in a country full of hungry people face another political question of how to get the grain out. Will villagers permit trucks laden with grain headed for port cities to proceed when they themselves may be on the verge of starvation? The potential for political instability in countries where villagers have lost their land and their livelihoods is high. Conflicts could easily develop between investor and host countries. These acquisitions represent a potential investment in agriculture in developing countries of an estimated $50 billion. But it could take many years to realize any substantial production gains. The public infrastructure for modern market-oriented agriculture does not yet exist in most of Africa. In some countries it will take years just to build the roads and ports needed to bring in agricultural inputs such as fertilizer and to export farm products. Beyond that, modern agriculture requires its own infrastructure: machine sheds, grain-drying equipment, silos, fertilizer storage sheds, fuel storage facilities, equipment repair and maintenance services, well-drilling equipment, irrigation pumps, and energy to power the pumps. Overall, development of the land acquired to date appears to be moving very slowly. So how much will all this expand world food output? We don't know, but the World Bank analysis indicates that only 37 percent of the projects will be devoted to food crops. Most of the land bought up so far will be used to produce biofuels and other industrial crops. Even if some of these projects do eventually boost land productivity, who will benefit? If virtually all the inputs -- the farm equipment, the fertilizer, the pesticides, the seeds -- are brought in from abroad and if all the output is shipped out of the country, it will contribute little to the host country's economy. At best, locals may find work as farm laborers, but in highly mechanized operations, the jobs will be few. At worst, impoverished countries like Mozambique and Sudan will be left with less land and water with which to feed their already hungry populations. Thus far the land grabs have contributed more to stirring unrest than to expanding food production. And this rich country-poor country divide could grow even more pronounced -- and soon. This January, a new stage in the scramble among importing countries to secure food began to unfold when South Korea, which imports 70 percent of its grain, announced that it was creating a new public-private entity that will be responsible for acquiring part of this grain. With an initial office in Chicago, the plan is to bypass the large international trading firms by buying grain directly from U.S. farmers. As the Koreans acquire their own grain elevators, they may well sign multiyear delivery contracts with farmers, agreeing to buy specified quantities of wheat, corn, or soybeans at a fixed price. Other importers will not stand idly by as South Korea tries to tie up a portion of the U.S. grain harvest even before it gets to market. The enterprising Koreans may soon be joined by China, Japan, Saudi Arabia, and other leading importers. Although South Korea's initial focus is the United States, far and away the world's largest grain exporter, it may later consider brokering deals with Canada, Australia, Argentina, and other major exporters. This is happening just as China may be on the verge of entering the U.S. market as a potentially massive importer of grain. With China's 1.4 billion increasingly affluent consumers starting to compete with U.S. consumers for the U.S. grain harvest, cheap food, seen by many as an American birthright, may be coming to an end. No one knows where this intensifying competition for food supplies will go, but the world seems to be moving away from the international cooperation that evolved over several decades following World War II to an every-country-for-itself philosophy. Food nationalism may help secure food supplies for individual affluent countries, but it does little to enhance world food security. Indeed, the low-income countries that host land grabs or import grain will likely see their food situation deteriorate.

#### Inequality causes global warfare

Lown, 96 (Bernard Lown, MD, Co-Founder of the International Physicians for the Prevention of Nuclear War, 1996, Crude Nuclear Weapons Proliferation and the Terrorist Threat, IPPNW Global Health Watch Report Number 1,<http://www.ippnw.org/crudenukes.pdf>)

Nuclear apartheid cannot endure. The stimulus to proliferation derives largely from an inequitable world order and the growing economic divide between rich and poor countries. One fifth of the world lives on the edge of subsistence. At a time of potential abundance, more people are hungry than ever before. We end the century with far more desperately poor, illiterate, homeless, starving, and sick than we began. Nowhere are the inequities more in evidence than in the health sector. Eight hundred million people are without any health care at all. One-third of the world's population lives in countries whose health care expenditures are far less than $12 per person per year (the bare minimum recommended by the World Bank) while the industrialized North spends more than $1,000 for health per person annually. Recent UN figures indicate that from 1960 to 1990, per capita income rose eight-fold in the North while increasing only half as much in the deprived lands of the South. This divide is likely to widen further while accelerating over-consumption in the North and burgeoning population pressures in the developing countries. As vital raw materials, scarce minerals, fossil fuels, and especially water become depleted, Northern affluence will be sustained by imposed belt tightening of impoverished multitudes struggling for mere subsistence. This is an agenda for endless conflict and colossal violence. The global pressure cooker will further superheat by the ongoing worldwide information revolution that exposes everyone to the promissory note of unlimited consumption, there by instilling impatience and igniting more embers of social upheaval. If desperation grows, the deprived will be tempted to challenge the affluent in the only conceivable way that can make an impact, namely by going nuclear. Their possession enables the weak to inflict unacceptable damage on the strong. Desperation and hopelessness breed religious fundamentalism and provide endless recruits ready to wreak vengeance, if necessary by self immolation in the process of inflicting unspeakable violence on others. A nuclear bomb affords "the cheapest and biggest bang for the buck." No blackmail is as compelling as holding an entire city hostage. No other destructive device can cause greater societal disruption or exact a larger human toll. Terrorists will soon raise their sights to vaporizing a metropolitan area rather than merely pulverizing a building.

#### Industrial agriculture treats food as a commodity – moral obligation to give control of food to the communities who need it

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

A salient feature of these agreements is that food is treated as a commodity rather than as crucial for the survival of all humans. Given that food is a basic necessity of life, unlike other commodities such as tires or computers, many governments and civil society movements believe that such policies are grievously misguided. As Lori Wallach of Public Citizen puts it, “Food—like water—is not an optional product that consumers may choose to purchase: food is the basis of life. People without food die, while people without cars or tires walk and people without tin ore use local materials.”3 As such, many believe that governments have an obligation to ensure food as a basic human right. The result of this shift has been a loss of livelihoods for millions of farmers, and the depression of rural communities; an increase in hunger in many parts of the globe; compromised nutrition and safety of food; increased environmental destruction; and the control of food production and distribution by an ever-smaller number of giant global agribusinesses. (See Box 1.) These are some of the outcomes of this shift: ❖ Local self-reliant food systems that had provided food and livelihoods for millions, and a secure food supply, are rapidly being replaced by corporate control—often foreign corporations—over farm inputs, energy, crop commodity prices, food production, and marketing. These corporations value profits and export trade over the needs of local communities for food and sustainable products. ❖ Industrial agriculture eliminates diverse food production for local needs, replacing it with large scale monocultural production of one or two crops appropriate for export markets; thus, diminishing natural biodiversity—of micro organisms, plants, insects, and animals, and diminishing local food supply as well. ❖ Heavy use of industrial agricultural processes, including pesticides, chemical fertilizers and fossil fuel-based machinery are rapidly destroying the vitality of the soil, polluting and over-using scarce fresh water, polluting the air, and harming wildlife and humans. ❖ The corporate introduction of genetically modified organisms (GMOs) and plants further destroys biodiversity and brings unknown, potentially catastrophic dangers via new forms of biopollution. ❖ The export driven model of globalized agriculture requires a huge increase in transport infrastruc- tures —roads, ports, airports, energy grids—often constructed at the expense of nature and in defiance of global energy shortages. ❖ Massive shipments of agricultural commodities across great distances requires additional fossil fuel usage, refrigeration, packaging, etc. and fosters mobility of exotic plant and animal species, and the spread of pests, viruses, bacteria, and disease. ❖ Control over and access to the most essential elements of life—the commons—are being stripped away from local communities and given over to corporations (often via World Bank privatization schemes). ❖ Traditional knowledge of seeds, plants, and cultivation are being expropriated for profit, and patented by large corporations—a process known as “biopiracy.” ❖ Agriculture accounts for approximately 25 percent of carbon dioxide emissions; and 70 percent of nitrous oxide emissions.4

#### Thus the plan – the governments of developing countries should implement programs to support sustainable agriculture.

#### That’s key to effect a shift to small-scale, organic agriculture – 7 warrants

Hoffmann 11 [(head of the Trade and Sustainable Development Section at the secretariat of the United Nations Conference on Trade and Development, member of the International Task Force on Harmonization and Equivalence in Organic Agriculture, editor in chief of UNCTAD's annual Trade and Environment Review) “ASSURING FOOD SECURITY IN DEVELOPING COUNTRIES UNDER THE CHALLENGES OF CLIMATE CHANGE: KEY TRADE AND DEVELOPMENT ISSUES OF A FUNDAMENTAL TRANSFORMATION OF AGRICULTURE” UN Conference on Trade and Development Discussion Paper No 201, Feb 2011] AT

First of all, it is important to remove or modify the existing tax and pricing policies that generate perverse incentives for sustainable production systems, such as overuse of pesticides, fertilizers, water, and fuel or encouraging land degradation. There should be a policy shift towards significantly increasing the efficiency of fertilizer and agro-chemical use and their replacement by soil-fertility-enriching (and carbon- absorptive) production methods that rely on multi-cropping, integrating crop and livestock production and the use of locally available bio-fertilizers and bio-pesticides. As most developing countries import all or the majority of the fertilizers and agro-chemicals used, a drastic reduction of their consumption therefore not only benefits the environment, but also leads to a reduction of the import bill and agricultural production costs.62 In India, for instance, overall public expenditures on agriculture have remained at approximately 11 per cent of agricultural GDP, while the share of subsidies for fertilizer, electricity and for price support of cereals and water has steadily risen at the expense of investments in public goods, such as research and development, irrigation, and rural roads (see below). Agricultural spending is about 4 times greater on subsidies than on such important public goods. In Zambia, only about 15 per cent of the 2003/2004 agricultural budget was spent on research, extension services, and rural infrastructure (World Bank, 2008: 115). Therefore, reallocating spending on private subsidies to public goods must be a central element of policy reform to encourage sustainable agricultural production. In addition to removing ‘perverse’ incentives, governments may also consider fiscal or market-based measures (e.g. GHG emission trading systems) to internalize GHG costs (for more information in this regard, see Kasterine and Vanzetti, 2010: 91–93). Second, assuring stability in land management and tenure systems is a very important policy issue. As the UN Special Rapporteur on the Right to Food put it “in a number of countries, the Green Revolution was effectively a substitute for agrarian reform: instead of encouraging increases in food production by redistributing land to the rural poor, it did so by technology” (De Schutter, 2009). In particular, small farmers need stable tenure systems to invest in soil fertility and production methods for regenerative agriculture.63 Agrarian reform should therefore continue to take centre stage on the political agenda of governments.64 This should include issues such as recognizing customary tenure, make lesser (oral) forms of evidence on land rights admissible, strengthen women’s land rights,65 allocate more land to smallholders with secured tenure, and establish decentralized land institutions (for more information, see World Bank, 2008: 139ff). Third, the share and effectiveness of public expenditures for agricultural development must be significantly increased. Public agricultural spending has been particularly lacklustre in agriculture-dominated developing countries (see table 2).66 Policymakers need to target investments carefully, putting resources into areas that have a large impact on improving physical and R&D infrastructure, linkages between farmers, and greater investment into extension education and services.67 While national-level investment in improving the transport and storage systems remains important, particular emphasis should be placed on developing locally shared infrastructure and improving value-added activities of farmers, to name but some key issues. Savings from the removal of perverse incentives can significantly reduce additional resource requirements in this regard. There could also be incentives in the form of (time-limited) land tax exemptions or lower cost credit to stimulate private investment. Such approaches are administratively simpler than subsidies and may not run afoul of WTO rules (Herren et al., 2011). According to the President of the International Fund for Agricultural Development (IFAD), “global food security can only be achieved through significant new investment in smallholder agriculture” (cited in Mactaggart, 2010b). Furthermore, governments need to pay special attention to strengthening the agricultural innovation and extension system for ecological farming methods 68, with particular emphasis on providing innovative, locally adapted and locally sourced solutions for smallholders.69 Paving the way for mainstreaming a mosaic of sustainable agricultural production methods requires integrative learning, in which farmers and researchers in agro-ecological sciences work together to determine how to best integrate traditional practices and new agro-ecological scientific discoveries. For this to take place, new channels and platforms for information exchange and skills’ transfer need to be developed (Herren et al., 2011). Enhanced regional and international South-South co-operation could play a useful role in strengthening agricultural R&D and extension capacity. The establishment of more regional centres of excellence, regional public research institutions and closer collaboration among existing research centres would be valuable steps in this direction (UNCTAD, 2010b).70 While public investment in agricultural research and development tripled in China and India in the 1980s and 1990s, it increased by barely a fifth in sub-Saharan Africa (declining in about half of these countries) (Pardey et al., 2006). With the exception of Brazil, India, West Asia and developed countries, the share of public R&D spending in agricultural GDP stagnated or even declined (see table 3).71 Fourth, agricultural policy is generally implemented by up to a dozen of governmental institutions. Achieving policy coherence and effective coordination of their activities are important for the paradigm shift towards regenerative agriculture as outlined above. Furthermore, coordination between environmental, natural resource, energy and agricultural policies is needed to maintain a consistent set of incentives for adoption of sustainable management systems and to facilitate cross-sectoral interactions, which are often involved in carbon crediting from agriculture. According to Stolze (2010), the creation of Support Platforms, which bring together potential public and private partners, supported by relevant experts, to jointly assess and further develop the priority activities identified may be worth considering. Fifth, regulations in the financial sector that facilitate the flow of funds for mitigation benefits to local communities are also important and have been a barrier to paying farmers for environmental benefits. Financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders’ ability to compete. Financial constraints originate from the lack of asset ownership to serve as collateral and the reticence to put assets at risk as collateral when they are vital to livelihoods. The demise of special credit lines to agriculture through public programmes or state banks has left huge gaps in financial services, still largely unfilled despite numerous institutional innovations (World Bank, 2008: 13). Therefore, special credit facilities (including micro-credit), community-oriented financial services, and the effective functioning of rural development banks are important in this regard. Another mechanism for facilitating access to financing for sustainable agricultural development is the broadening of payments for environmental services.72 Watershed and forest protection, for instance, create environmental services (clean drinking water, stable water flows to irrigation systems, carbon sequestration, and protection of biodiversity) for which providers should be compensated through payments from beneficiaries of these services. Interest in the widespread use of payments for environmental services has been growing, particularly in Latin America. In Nicaragua, for example, payments induced a reduction in the area of degraded pasture and annual crops by more than 50 per cent in favour of silvo-pastoralism, half of it by poor farmers (World Bank, 2008: 16). Sixth, small-scale farmers, their networks and sustainable production methods must again become an explicit component of national development strategies and an important target for development assistance (for more information, see Cook, 2009). Seventh, strengthening the performance of producer organizations and empowering the capacity of local communities should also figure prominently on the agenda of governments. Collective action by producer organizations is important for building research and skill capacity, reducing transaction costs, increasing market power, and strengthening representation in national and international policy forums. For smallholders, producer organizations are essential to achieve competitiveness (World Bank, 2008: 14). Strengthening the capacity of local communities in their stewardship of biodiversity, conservation of rangelands and fragile agro-ecological zones must be recognized as an essential strategy. Therefore, a policy framework around the stewardship of biodiversity at all levels needs to be created. Local communities can also play a very pro-active role in facilitating exchange of local knowledge, its blending with modern scientific tools and related dissemination through farmer-field schools, participatory plant breeding and community seed banks. Local communities can also be instrumental in promoting the de-centralized use of bio- and other renewable energy sources.73 Finally, agricultural mitigation and adaptation actions should be high priority candidates for being integrated into Sustainable Development Policy and Measures (SD-PAM), Nationally Appropriate Mitigation Actions (NAMAS), and National Adaptation Programmes of Action (NAPAs). According to Stolze (2010), priority should be given to adaptation measures that bring about mitigation consistent with sustainable development objectives. The integration of agricultural mitigation programmes into agricultural development strategies will need to be part of the overall effort to improve the sector’s performance and the livelihoods of small farmers (FAO, 2009a).74 The role of agriculture has to be closely interlinked with overall national development strategies (or plans) to bring about the structural transformation required for effective climate-change adaptation and mitigation.

# Kenya

## 1AC

### 1AC Regular

#### Current industrial methods of agriculture in Sub-Saharan Africa cause massive soil loss which causes total collapse of agriculture and deforestation – a shift is key to prevent millions from starving

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Today 80 percent of all Sub-Sahara Africans are farmers and approximately 60 percent of these rely totally on agriculture for food and economic security1 . Sub-Sahara Africa is the place on Earth with the lowest food security in the world, more than 200 million people are suffering from undernourishment 2 . The high population growth is escalating the pressure on the agriculture land, land that already seems to be unable to feed all its inhabitants. Most of these farmers are small scale farmers using very simple techniques and having no access to modern agriculture knowledge and techniques. Africa is today the continent that, with a big margin, gets least yield from a hectare of land 3 . Asia gets on average three times more yield from one hectare of land and countries in the European Union and North America get on average 4.5 times more yield4 . This is not because Africa in any way has less fertile land or bad conditions for agriculture, quite the opposite, Africa has vast lands available for agriculture. But it is because of the agriculture techniques used for cultivating the land. Africa is also the poorest and least developed of all continents 5 and there is a strong correlation between yield and money input in the agriculture sector. This is partly explained by the high input of off-farm components like synthetic fertilizers and synthetic pesticides in industrialized agriculture used in western industrialized countries. These inputs are expensive but necessary in highly effective mono-crop agriculture systems to meet the high nutrient demand. The usage of this kind of system without the adding of external nutrient sources will fast deplete the land of nutrients and Organic matter and will be devastating for soil fertility. Many of the agriculture practices used in Africa are attempts to copy the western way of performing agriculture. This is for one part a colonial rest where western countries introduced industrialized agriculture to Africa but also different African governments´ misdirected attempt to enhance the agriculture output up to the much needed western standard by using western techniques. Using western agriculture techniques is very unlikely to work in western Africa, as being very different, based on other economic and biophysical realities. This is why badly adapted, ineffective and environmentally harmful agriculture techniques can be seen in Africa. It is undeniable that the present agriculture system in Africa is unsustainable and is really not working under the African conditions. There are alternative agriculture techniques available to the African farmer, but the spreading of the information and a convincing teaching of these systems involve a big cost. This also explains the correlation between yield and money input in the agriculture sector. Modernizing the African agriculture system considering the local economic, cultural and biophysical conditions is a key factor on enhancing the yield per hectare. Undernourishment cannot only be explained by the lack of food. Politically stable countries in the sub-Saharan region that had time to build up distribution channels and market infrastructure show a lower percentage undernourished than countries that had poor and unstable political power with the same amount of food produced6 . This shows the importance of not only good agriculture practices but also the importance of a working market system and good governance to lower the number of undernourished. In the sub-Saharan region the percentage of undernourished dropped marginally from 35 to 32 during the last decade 7 . This number might seem positive, but during the same period the environmental degradation has been enormous. The explanation of the decrease of undernourished is only by a fraction explained by better use of the existing agriculture land and better distribution but rather on the exploitation of new areas and the overuse of old agriculture areas. As a proof for that stands the rapidly accelerating problems of deforestation and soil erosion which both are strongly correlated with bad agriculture practices (see section 2.4 Soil erosion). According to the Food and Agriculture Organization (FAO) of the UN, Africa has the highest percentage of forest loss of any continent and the main reason, about 60 percent, for that is said to be the conversion to new agriculture land 8 . The organization “World rainforest movement” states that 10 percent of Africa´s forest disappeared only between 1980 and 1995. In Kenya only 3 percent of the indigenous forest are left. In Rwanda around 40 percent of the land is considered at high erosion risk and cannot be cultivated9 , a big increase compared to 20–30 years ago and this tendency can be seen in almost all sub-Sahara Africa countries. The bad agriculture practices used in sub-Sahara Africa so far been functioning because of the stock of good soil and abundance of trees created over times past. This stock is rapidly running out during a time when more people than ever are dependent on it. To change the agriculture before the soil stock is running out is especially critical in the poor rural areas of Africa. Poor smallholder farms in Africa cannot afford the synthetic fertilizers that can be a temporary way of postponing the consequences of an infertile and arid land. That is the last possibility and without that and no new land to exploit, the poor farmer is in a very serious situation. The prevailing system has encouraged the overuse and exploitation of new land, which is the practice that has generated most income for the farmer. Farmers who have been trying to be sustainable and restricted the output yield to the natural input of nutrients and Organic matter, have been competing with farmers who get a higher quantity of yield because of overuse and overexploitation. With the fluctuating market price on agriculture crops depending on the supply the sustainable farmers with the lower yield are left with a bad income, and many of these farmers have been forced into unsustainable practices to get an income big enough to support their family. “The tragedy of the commons” dilemma can be seen where the limited shared resources are being destroyed by multiple individuals acting in their own interest even when it is clear that it is in none‟s long term interest for this to happen10 . A big majority of the farmers are small scale farmers with only a few acres of land 11. All these small scale farmers are competing with each other on the same market with the same product. With high competition and high asset, the price is most certainly going to be low. When there is an excessive amount of the product relative to the demand there is a risk that some farmers will not get their product sold. So the farmer who puts a price according to what he needs to get a decent living standard from his income is at risk of not getting any buyers when the neighboring farmer is willing to sell for less. Then the first farmer must be prepared to lower his price, and at the same time much of his tangible living standard tightly correlated with his income, to get any of his products sold. This race continues until all farmers come to the point when they are no longer able to lower their price because this will deny them even the most minimal living standard. The competition can get even worse by international aid in the form of free agriculture products. This can have devastating effects on the local market price of agriculture products and therefore the living standards of small-scale farmers12 .

#### Deforestation from agriculture destroys Kenyan forests, a crucial biodiversity hotspot – also, agriculture kills bees

Obare and Wangwe no date [(Lynette, Assistant Lecturer at Strathmore University, Department of Geography) “Underlying Causes of Deforestation and Forest Degradation in Kenya” Forest Action Network] AT

Kenya’s forests are rapidly declining due to pressure from increased population and other land uses. With B of the country being arid and semi-arid, there is a lot of strain on the rest of the land since the economy is natural resource based. The productive area which forms about 20% of the country’s area falls in the medium and high potential agro-ecological zones and is under agriculture, forest and nature reserves. According to FAO Forest Resource Assessment 1990, Kenya is classified among the countries with low forest cover of less than 2% of the total land area. The dwindling forest cover has a severe effect on the climate, wildlife, streams, human population especially forest dwellers. 1.1 Introduction Mau Forest Complex is located in the Rift Valley province, about 200 km to the south-west of Nairobi and straddles four Districts: Kericho, Nakuru, Bomet, and Narok. It lies in the montane rain forest region which has a good potential for closed-canopy growth. The forest contains the largest remaining block of moist indigenous forest in East Africa covering an area of 900 km². The forest is gazetted and is under the managerial custody of the State's Forest Department. It was first gazetted in 1932 by the colonial government. Many alterations to the forest cover have taken place since it was first gazetted. These have resulted from excisions, additions, and boundary alterations. Bioregion The Mau forest is situated on the Mau escarpments in the Great Rift Valley. It forms the upper catchment of Sondu, Mara and Ewaso Ngiro rivers, which drain into Lakes Nakuru, Baringo, Victoria, Naivasha, Natron and Bogoria. The Kenya Forest Master Plan (Ministry of Natural Resources, 1994), put the Mau forest catchment protection value at 806 million Shillings per year, which is the highest of all the watershed forests in the country. It is important to note that some of these lakes are inter-boundary for example Lake Victoria which straddles three countries in East Africa namely Kenya Uganda and Tanzania. River Nile originates from this lake and flows to the Mediterranean Sea. Biodiversity Flora The forest is also rich in bio-diversity and hosts several indigenous tree species like Olea africana, Dombea goetzenii, Acacia spp, and Bamboo spp. among others. The forest has been described as being a part of the Afromontane archipelago-like. It comprises of Afromontane Forest and Afromontane Bamboo at the higher altitude. Specifically, it comprises of secondary plant community derived from Rain forest formation after logging at one time in its history (KIFCON 1994). The initial vegetation was dominated by Neoboutonia macrocalyx, which is gradually being replaced by the climax species. Being on an escarpment, the vegetation in the Mau forest is distinct at different altitudes. Rainfall is higher and continuous on the western side with no marked dry season, and mean annual rainfall of 2,000 mm and above. On the steep slopes of the escarpment, there is a Moist Montane Forest, characterized by a mixture of evergreen, semi-deciduous and deciduous trees. The average canopy height in this area is about 20 meters. The commonest tree species are Cyathea manniana, Ensete ventricosum, Acanthus eminens and Lobelia gibberoa. The Eastern side, which lies in a rain shadow, experiences a bimodal rainfall distribution, peaking in April and again in July/August, and mean annual rainfall varying from 1,000 to 1,500 mm and there is a dry forest type of ecosystem. This forest comprises mainly of Juniperus procera, Hypericum revoltum, Olea capensis, Podocarpus latifolius and Dombeya goetzeni. Glades are also common in the Mau forest most of which are as a result of fire burning the vegetation. It is thought that the fires are usually deliberately started as a way of improving the pastures or to clear land for cultivation especially in area with bamboo forests. High mountain bamboo thickets, Arundinaria alpina, are found at the topmost parts of the forest. Polystachya eurygnatha is an archid endemic to Mau forest while Chionanthus mildbraedii is a shrub recorded to be found only in Kenya. Fauna Among the large animals found in this forest are Bongo, Yellow backed Duiker, Golden cat, Giant forest hog, Leopard, Hyena, Buffalo, Colobus Monkey, and Impala. The Yellow backed Duiker, the Bongo, the Golden Cat, Leopard and Elephants are some of the important mammals of international conservation concern. Other nationally endangered species found only in this forest are the Potto, the spotted Necked Otter, and the striped Hyena. The forest is also rich in a variety of birds and is ranked second among the forests west of the Rift Valley. There are no endemic bird species in this forest but it is said to represent the richest montane avifauna in the Eastern Africa. 173 species have been spotted in the forest. 1.2 Forest-Community Relationship. Mau forest is the home of the largest group of forest dwellers, the Ogiek. Since time immemorial, the Ogiek people have been living inside the Mau forest, depending on the forest for subsistence and shelter. They divided the forest among their clans using natural features like rivers, valleys or hills as boundaries. In the period between 1904-1918, the colonial government tried to evict the community from the forest, but without success. The forest was gazetted in 1932 while these people were still inside. Once again in 1941, the colonial government tried unsuccessfully to evict them after gazetting it but this only drove them further inside the forest because there was no communication between them and the government. They did not know what was expected of them. It was unheard of for the government to consult with the community and it is said that one government officer who tried it in 1935 was rebuked and sacked by his senior. The postcolonial government did not change its attitude towards the Ogieks. It tried to evict the people in 1972 and 1977/87. In 1972, the government succeeded in evicting the people but most of them moved back into the forest after only six months. During the 1977/87 evictions, the government instructed the people to congregate around the forest stations in order to be resettled elsewhere later on. A small percentage (about 25%) did this while others went deeper into the forest. In 1992 the government forcefully evicted all the forest dwellers who were still inside the forest and concentrated them at the forest stations and promised to allocate them land. To date, most of the Ogieks live at the forest stations but some moved to the riverbanks where they also practise subsistence farming. The local administration then alienated that part of the forest that had been converted into plantation forest, subdivided it into five-acre plots and allocated it to individuals. The Ogieks allege that those people allocated the land were not members of their community but from the area around the forest. The forest was still gazetted and under the custody of the forest department. The forest department was not involved in the clear felling of the forest and the allocation of the land. The communities living around the forest also depend on the forest especially during the dry weather. A case study done in Njoro area East of the Mau forest indicated that the farming community in this area utilise the plantation area to grow food crops especially vegetables during the dry seasons. There has been a negative environmental impact on the forest since the clear felling started. Wildlife corridors have been tampered with exposing the forest dwellers and forest neighbours to attacks from elephants. Land that is on a slope of more than 50 % gradient has been allocated to farmers with no measures to check the soil erosion. The Ogieks have always relied on forests as a source of livelihood. Honey harvesting, hunting, gathering of wildfruits and nuts from the forests have been their occupation. They started keeping livestock in 1952. All the Ogiek groups have lived in or near high forests. Forest resources played an important role in Ogiek culture rendering their conservation vital. Whenever the Ogieks moved in the forests, they used their traditional set-up to conserve it. These conservation measures that were passed on to the community by the elders include: Ensuring that there were no forest outbreaks Allowing only the experienced elders to make beehives from the trees, so that the barks used to make such beehives are removed in a particular way that conserves the tree. The most commonly used tree for this is Juniperus procera. Creating awareness on important tree species like Dobeya goetzeni, Olea euro, Olea hochstetteri which were used for honey and herbs. The community members were prohibited from cutting these trees. In order to manage the forest properly the Ogieks allocated blocks of forests to clans to use. The forest areas are first occupied by a clan which divides it according to the family tree. Each family gives a name to their part of the forest, for identification and awareness of other families and customary respect for boundaries; the boundaries are recognised according to the customary land tenure system, where rivers, streams, valleys, glades, swamps and hills serve as boundaries. The Ogiek land tenure system aimed at defusing feuds resulting from hunting and beekeeping rights. 1.3 Direct causes and actors leading to deforestation and forest degradation Clearing natural forests to establish plantations In 1930, parts of Mau forests were cleared for the establishment of forest plantations using mainly exotic species. These occupy about 10% of the forest. The Ogiek community have been receding into the natural forests when this happens as their lifestyle depends on natural forests. Most of these plantations found surrounding the indigenous forests have been cleared to pave way for agriculture. Without the protection offered by the plantation the indigenous forests are now threatened. Logging Saw millers obtain licences to permit them to practise logging especially within the plantations. They also have to pay logging fees to the forest department. These charges are very low and not revised often to reflect the current economic situation. The saw-millers do not stick to the guidelines on logging and the Forest department does not have the mechanisms to enforce the rules and regulations under the current retrenchment process. The forests have been logged extensively in a non-systematic way. There is no annual allowable cut established and no adequate yield regulation in place. Often, there is intensive selective cutting and overexploitation leaving behind an inferior stock to mature as a final crop. This leads to further forest loss as the Department cannot rehabilitate the areas where trees have been felled. Conversion of natural forests into agricultural land: The Shamba system The Shamba system is adopted from the Taungya system of South America. It was devised by the Forest Department (FD) in 1943 to facilitate plantation establishment. This was prompted by the acute land shortage faced by communities after colonisation, and a need to reduce plantation establishment costs by the Forest Department. It was also meant to provide food security to those who practised it. Under the Shamba system, the cultivators were incorporated into the FD through employment and were permitted to clear and cultivate cut over indigenous bush cover from a specified land area; usually between 0.4-0.8 ha per year. This is done with the agreement that tree seedlings are planted on this land, and subsequently tended through weeding, pruning and safeguarding against game damage. In return the FD provided the resident cultivator with employment, social amenities and land for the cultivation of annual crops such as maize, potatoes, beans, peas and other vegetables. Cultivation proceeded until a time when tree seedlings were large enough to shade, and thus inhibit the growth of annual plant crops; usually a period of 3-5 years. The extent of the Shamba system was restricted to the high potential areas, comprising about 3% of Kenya's land area, and representing 12% of Kenya's total agricultural land. These areas are endowed with fertile soils of volcanic origin and a high annual (>1000 mm) rainfall with a bimodal distribution. Clearly, the Shamba system was an important arrangement which enhanced and sustained the food security of otherwise landless peasants. The system was discontinued in 1986 chiefly due to an expanded human population whose demand for forest land allocation exceeded the initial FD objective of plantation establishment. In addition, illegal activities (e.g.. forest clearing, tree poaching, hunting) from the resident cultivators and their families jeopardised forest protection and management. Interestingly, resident cultivators in forest areas with high wildlife populations voluntarily gave up the practice due to crop destruction and livestock predation. After the Shamba system was stopped, communities living around the forest moved in and settled in areas that were cleared. Forest degradation has escalated as they do not use indigenous forest management knowledge. In the 1990s the Forest Department introduced the Non-resident Cultivation (NRC) for the establishment of plantation forests. Through the approval of the respective District Development Committees, cultivators were involved in plantation development under certain terms and conditions that were enforced by the respective Forester, District Forest Officer and Provincial Forest Officer. The Non-resident cultivation is a modification of the Shamba system that attempts to reduce the risk of cultivators claiming squatter rights on forest land. The system however, fails to take into account the need to protect crops from wild animals and thieves that invade the plots at night. The Ogiek people did not practice any Shamba system or non-resident cultivation. Those who still reside in the forest do very little cultivation, but not within arrangements sanctioned and therefore controlled by the Forest department. Moreover, the Ogieks of Mau do not dwell in plantation forests where the Shamba system or non resident cultivation is done. Their homes are in natural forest reserves. Human Settlement Carving out of forests for human settlement is on the increase as the government is very keen to settle the forest dwelling communities along the forest boundaries or within the cleared forest plantations. However the Ogieks are strongly opposed to this and are keen on working out modalities of managing the forests together with the government. There has been continuous eviction of the community from the forests for resettlement outside the natural forests. Some community members are still back into the forests and do not want to change their current lifestyle. This resettlement is politically motivated as the community is aware of some people who have registered as part of the community in order to obtain land. So far the outsiders have been allocated land but some of the Ogieks are still concentrated in Forest Reserves. Forest excisions The process of forest protection was introduced under the ‘East Africa Forest Regulations, 1902’ by the first Conservator of Forests. These regulations allowed for the gazettement and degazettement of forests, and control of forest exploitation through a system of licences and fines. The Government through the Minister for Natural Resources has the express authority to degazette the forest through a legal process of excision. This excisions are done with the intent of converting the area to other alternative land uses like settlement, private agriculture that do not foster tree cover. The forests are degazetted then surveyed and demarcated for the proposed use. There are several loopholes in the excision process. These include: The excisions are made without consultation with the stakeholders. Procedures of collecting public views and sharpening their perspectives on causes-effects linkages as it may affect those aggrieved by the excision are never put in place and neither are provisions for compensation clear. A notice is placed in the Kenya Gazette and whoever wants to contest it is given 28 days to do so. The Minister is however under no obligation to consider the views in the final decision. The readership of the Kenya Gazette is very limited and not many people get to know about the notices. The Minister has the powers to put in a notification and he can be influenced by political and economic pressure but not necessarily for the common interest of the public. Excisions usually take place after the forests have already been illegally occupied. There is no environmental and socio-economic impact assessment done for the proposed changes in land-use leading to unsustainable land management. Fires In order to clear land for cultivation or grazing, those intending to settle into the forest set the vegetation on fire. The fires spread extensively and cause a lot of damage to the forest biodiversity. Charcoal burners also destroy the forest as they use traditional kilns which are not energy efficient, this activity is done illegally and therefore no one controls or tends the fires which in most cases destroy the areas surrounding the charcoal burning sites. The actors responsible for the mentioned direct causes include the Forest Department, saw millers, politicians, and influential persons. Since Mau Forest is a gazetted forest, and therefore government property, no individual or community has the legal right over this resource. This gives leeway for illegal exploitation as the people are alienated from their resources. The Ogieks are not able to intervene when they also see outsiders destroying what they have lived to conserve and this is very disheartening. There are a lot of powers vested onto the Minister of Natural Resources especially regarding excision. In a situation whereby policy decisions are entrusted in the hands of a few individuals they are not made to serve the public interest. 1.4 Community interventions to counteract the deforestation process and problems encountered Protection of the rivers and streams in the area The community members have a system of managing the forests through their lineage system. Each clan is in charge of a forest block, zoned along natural boundaries like rivers, hills and valleys. It is the responsibility of the elders to ensure that the resources are used in the right way. This knowledge is passed on to the young generation by this elders. The community members protect the streams by ensuring no cultivation is done within 50 metres on both sides of the rivers. However this can no longer be ensured as the Government is always removing them from the forests and resettling them elsewhere. There is a lot of infiltration into the forest by outsiders who are not keen in managing the river banks and just clear the trees for short term gain. Community involvement in forest conservation The Ogieks recognise the fact that they have lived in the forests and depended on them through out their lives. They have used their indigenous knowledge to sustainably utilise the forest products (honey, wild fruits and nuts, game meat) and ensure the resources are protected. They noted with concern that the destruction of the forest is done by outsiders who burn charcoal and fell trees for timber. They realise that those destroying the forests will have an impact on them even when they conserve the areas where they are allocated. They propose that their traditional forest management knowledge be incorporated into conventional forest management. They also request to be involved in the decision making process regarding forest management. They are limited by the present tenure system as they live in the forest but do not have ownership rights over it from the time it was gazetted. With the current resettlement programme they are keen to obtain ownership of the land then make tangible future conservation plans. They prefer to own the allocated land communally and manage it this way. They are keen on adoption of agroforestry practices and would still like to continue hunting, collecting honey and wild fruits from the natural forests. They are however, restricted from these activities and are opposed to any forced change in their way of life. Legal mechanisms In order to counter political interference and allocation to forest land to individuals the Ogieks have filed a case in court which is on-going and will take time considering the legal procedures to be followed. The defendants include the Attorney General, the Area District Officer, District Forest Officer, and the Office of the President (which gave the directive that parts of the forests be subdivided for settlement). 2. Description of the underlying causes and the actors responsible for them 2.1 Underlying causes of deforestation and forest degradation Weak policy formulation and enforcement The land policies in totality often tend to be agrarian favouring large-scale farmers. They are not consistent as they application varies with different regions or sectors depending on the land tenure systems. This leads to confusion, misuse, non-use, and indiscriminate destruction of the resources. The government has acknowledged the need for a serious review of the land tenure system but has not implemented this. The Policy Framework Paper on Economic Reforms for 1996-1998 confirmed the intention of the government to establish a Land Use Commission to address land tenure and land policy issues with a view to improving sustainable agricultural productivity and food security situation as well as ensuring biodiversity considerations are taken in land-use decisions. To date, no commission has been set up this being the last year of the reform period. Policy mandates on conservation, governance, accessibility and sustainable use of forestry resources does not offer a broader range of public participation and approval in its decision making process. The current policy and legal framework does not promote sustainable forest management. It was inherited from the colonial era and more concerned with control and distribution rather than management. It is based on Session Paper No. 1 of 1968 which was a restatement with minimal changes of White Paper No. 1 of 1957 that was the basis of colonial forest policy. It does not give room for collaborative forest management and neither does it take into consideration the lifestyle of the forest dwellers. It further fails to clarify issues of forest resource ownership, accessibility, mechanism for public approval and redress in its judicial and administrative procedures. The policy is enacted through the Forest Act that vests a lot of power in the hands of the Minister for Natural Resources. An amended forest policy based on the Kenya Forestry Master Plan that recommends the development of several forms of partnerships which will incorporate and involve all forestry stakeholders in forest management is yet to be tabled in parliament for debate. The Ogieks lived in the forest before it was gazetted and it is their ancestral land. They had customary land rights over the forests. The forest dwellers find themselves in a very precarious position as they do not have security of tenure under the present system and are often victims of inappropriate decisions made for them. For instance they have been evicted from the forest many times and are no longer provided with social amenities in the forest. They are also prohibited from grazing, hunting and collecting honey in the forest. In terms of enforcement, the penalties that are laid down on infringement of forest land is very low compared to the potential gains from illegal activities. Those in-charge enforcing the legislation are lax as they not well motivated to do so and often work together with those destroying the forests. Political factors As a result of political rivalry, forests were given to supporters of particular politicians as a bribe or repayment for political patronage. Most of the forest was subdivided into five hectares plot for allocation just before the last elections. This was done to woo the voters from particular communities. There were a lot of outsiders posing as Ogieks in order to obtain land. There has also been a move to try and assimilate the Ogieks into bigger tribes. Those allocated the land are after quick gain and not interested in conservation. In any case this sub-division interferes with forest biodiversity as the plots are put under different land use systems. The decision regarding forests lies in the hands of the Minister of Natural Resources who is influenced by other top politicians. Natural resources are destroyed to enrich the political royalty. Therefore it is the politically correct who benefit from forest excisions. The decision to subdivide Mau forest was made in an ad-hoc manner without consultation with those depending on them or the environmentalists. Even the Forest department was not consulted on this issue yet they are the custodian of this forest. The forest dwellers adversely affected by such decisions. Macro economic policies Cash crop production for export: Cash crop farming is on the increase on the cleared portions of forest. These cash crops are grown for export to the industrialised countries and compete in the world market to earn the country the much needed foreign exchange. The crops grown include tea and pyrethrum. The Ogieks claimed that pyrethrum and pesticides applied on the farms kill bees and have rendered bee keeping unviable. Bee keeping is affected by the growing of pyrethrum and the use of pesticides on the farm, it is therefore not a suitable alternative to harvesting of honey in the forest. Nyayo Tea Zones Development Corporation was assigned forest land in order to grow tea to provide a buffer between the agricultural land and forests designated for protection as well as an alternative source of income and employment. This was established by Presidential order in 1986 and Act of Parliament in 1988. The approximate boundary planting width that the zones were to occupy were not formally established but a general width of 100m into the forest was nominally accepted. Little consideration was given to the suitability of these areas, they are moderate to poor for tea growing in some parts. Further, the areas have been affected by poor management and poor access leading to further degradation of the forest. This tea zones have been the largest alternative use of forest land in Mau, out of a total of 2152 ha cleared in Mau Forest, only 542 ha were planted with tea leading to serious forest loss and degradation. The market promotes growing of these commodities for global trading thus impact on the activities at the local level. Liberalisation The liberalisation process has put a lot of emphasis on the privatisation of public land and forests resulting in the non recognition of customary resource tenure. The Ogieks have been denied their ancestral rights to the land they occupy. The government is in the process of issuing title deeds for forests and this process can be abused in terms of area the area quoted in the title deed being much less than the actual forest area. Structural Adjustment Programmes: As a result of the restructuring process going on the Government has had to trim the public sector and reduce the budget allocated to its various departments. The Forest department has not been spared from this. Most of the forest guards have been retrenched making it very difficult for the forests to be managed well. This encourages illegal use of forests. Population pressure Kenya’s population is concentrated on the arable land which is about 20% of the country’s area. This puts a lot of strain on the forests which are seen as ‘free land for potential use’. In Mau Forest, those coming from outside (the forest neighbours) would like to reap maximum benefits from it. They come to get land for cultivation (some practise commercial tractor farming) and grazing. They supplement their income by felling indigenous trees for charcoal. The Ogieks are keen on utilising the forest sustainably as they depend on it for their livelihood. This brings about a lot of conflict between these two groups resulting to further destruction.

#### Bees are key to biodiversity and agriculture – agriculture is the key internal link

Shah 11 [(Anup, founder of Global Issues) “Why Is Biodiversity Important? Who Cares?” Global Issues April 6] AT

Bees provide enormous benefits for humankind as another example. As reported by CNN (May 5, 2000), “One third of all our food—fruits and vegetables—would not exist without pollinators visiting flowers. But honeybees, the primary species that fertilizes food-producing plants, have suffered dramatic declines in recent years, mostly from afflictions introduced by humans.” As German bee expert Professor Joergen Tautz from Wurzburg University adds: Bees are vital to bio diversity. There are 130,000 plants for example for which bees are essential to pollination, from melons to pumpkins, raspberries and all kind of fruit trees — as well as animal fodder — like clover. Bees are more important than poultry in terms of human nutrition. — Joergen Tautz interviewed by Michael Leidig, Honey bees in US facing extinction, The Telegraph, March 14, 2007 Researchers are finding reasons for the massive decline hard to pinpoint, but suspect a combination of various diseases, environmental pollution, environmental degradation (leading to less diversity for bees to feed from, for example) and farming practices (such as pesticides, large monoculture cropping, etc). The link and dependency between plants, bees, and human agriculture is so crucial, the two scientists writing up years of research into the problem summarized with this warning: Humankind needs to act quickly to ensure that the ancient pact between flowers and pollinators stays intact, to safeguard our food supply and to protect our environment for generations to come. These efforts will ensure that bees continue to provide pollination and that our diets remain rich in the fruits and vegetables we now take for granted. — Diana Cox-Foster and Dennis van Engelsdorp, Solving the Mystery of the Vanishing Bees, Scientific American, April 2009

#### A shift to organic ag solves water crisis and ecosystem degradation

Pretty 6—Professor of Environment and Society at University of Essex [Jules Pretty, Agroecological Approaches to Agricultural Development, Background Paper for the World Development Report 2008, November 2006]

Widespread appreciation of the `global water crisis’ recognizes that scarcity of clean water is affecting food production and conservation of ecosystems. By 2025 it is predicted that most developing countries will face either physical or economic water scarcity. Water diverted from rivers increased six fold between 1900 and 1995, far outpacing population growth. Increasing demand for fresh water now threatens the integrity of many aquatic ecosystems, and their associated environmental services. As agriculture accounts for 70% of current water withdrawals from rivers, so improving the productivity of water use in agriculture is a growing challenge. The potential for increasing food production while maintaining water-related ecosystem services rests on capacity to increase water productivity (WP), i.e. by realizing more kg of food per unit of water. Sustainable agricultural practices may do this by: i) removing limitations on productivity by enhancing soil fertility; ii) reducing soil evaporation through conservation tillage; iii) using more water efficient varieties; iv) reducing water losses to unrecoverable sinks; v) boosting productivity by supplemental irrigation in rainfed systems; and vi) inducing microclimatic changes to reduce crop water requirements (23). We calculated changes in WP for field crops in 144 projects from the data set (Table 5) based on reported crop yields and average potential evapotranspiration (ETp), for each project location during the relevant growing season. Actual evapotranspiration (ETa) was assumed to equal 80% of ETp, and ETa to remain a constant at different levels of productivity. Pg. 19

#### Water shortage is specifically true for Kenya – Kenyan agriculture causes water shortage soon

CIEN 4 [(Chemical Information Exchange Network (CIEN) is a network of people involved in the management of chemicals) “Environment Management” MINISTRY OF ENVIRONMENT AND MINERAL RESOURCES. No date, 04 is last date cited] AT

The current environmental issues of concern in Kenya currently: 1. Water pollution from urban and industrial water-this affects major urban areas like Nairobi, Kisumu, and Mombasa etc. Decline of flamingoes in L. Nakuru has been attributed to this cause. 2. Degradation of water quality from increased use of pesticides and fertilizers-this affects the agricultural areas and upsets ecosystems of local water systems e.g. L.Naivasha 3. Water hyacinth infestation in L. Victoria. 4. Solid waste management and disposal-Is a major challenge for the major urban areas. 5. Deforestation, desertification and soil erosion: these are intertwined and is blamed for climatic changes and depletion of water catchment areas Water resources Water resources are under pressure from agricultural chemicals and urban and industrial wastes, as well as from use for hydroelectric power. Kenya expects a shortage of water to pose a problem in the coming years. Water-quality problems in lakes, including water hyacinth infestation in Lake Victoria, have contributed to a substantial decline in fishing output and endangered fish species. Water pollution from urban and industrial wastes poses another environmental problem. Kenya has 20.2 cubic kilometers of renewable water resources with 76% used in farming activity and 4% used for industrial purposes. Only about 42% of the residents in rural areas and 88% of city dwellers have pure drinking water.

#### Ocean degradation causes extinction

Craig 3 [Robin Craig, Indiana University, Robin Kundis, Winter, 34 McGeorge L. Rev. 155, p. 264-266]

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far rarely been raised in political debates. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. More generally, "ocean ecosystems play a major role in the global geochemical cycling of all the elements that represent the basic building blocks of living organisms, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." In a very real and direct sense, therefore, human degradation of marine ecosystems impairs the planet's ability to support life. Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity, "indicating that **more diverse ecosystems are more stable**." Coral reef ecosystems are particularly dependent on their biodiversity. Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is higher on coral reefs than in any other marine environment. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire lawmakers and policymakers to admit that most of the time we really do not know what we are doing to the sea and hence should be preserving marine wilderness whenever we can - especially when the United States has within its territory relatively pristine marine ecosystems that may be unique in the world. We may not know much about the sea, but we do know this much: if we kill the ocean we kill ourselves, and we will take most of the biosphere with us**.** The Black Sea is almost dead, its once-complex and productive ecosystem almost entirely replaced by a monoculture of comb jellies, "starving out fish and dolphins, emptying fishermen's nets, and converting the web of life into brainless, wraith-like blobs of jelly." More importantly, the Black Sea is not necessarily unique. The Black Sea is a microcosm of what is happening to the ocean systems at large. The stresses piled up: overfishing, oil spills, industrial discharges, nutrient pollution, wetlands destruction, the introduction of an alien species. The sea weakened, slowly at first, then collapsed with shocking suddenness. The lessons of this tragedy should not be lost to the rest of us, because much of what happened here is being repeated all over the world. The ecological stresses imposed on the Black Sea were not unique to communism. Nor, sadly, was the failure of governments to respond to the emerging crisis. Oxygen-starved "dead zones" appear with increasing frequency off the coasts of major cities and major rivers, forcing marine animals to flee and killing all that cannot. Ethics as well as enlightened self-interest thus suggest that the United States should protect fully-functioning marine ecosystems wherever possible - even if a few fishers go out of business as a result.

#### East African aquatic ecosystems are also a biodiversity hotspot – agriculture is the key internal link

UNEP 2000 [(United Nations Environment Programme) “The environment of Eastern Africa”] AT

The Eastern African region covers four coastal countries along the East African coast (Kenya, Mozambique, Tanzania and Somalia), one large island state (Madagascar), three smaller archipelagic states (Comores, Mauritius and Seychelles), and the territories of France in the southwest Indian Ocean (La Réunion). The environment here defies generalization, and encompasses several biogeographic provinces. Ecotypes include coastal dry forestss, coastal dunes, coastal floodplains, fresh and brackish water marshes,mangvoe forests, coral reefs, reef-back lagoons, sandy beaches and seabird rookeries (sea cliffs and nearshore islands). These areas function as essential habitat for local species including fish and migratory birds, as shoreline stabilizers, and as buffers again coastal erosion. The coast of Eastern Africa is bathed by the great current systems of the Indian Ocean, which vary greatly with the seasonal monsoons. The Indian Ocean has particularly narrow continental shelves along this coast, and thus lower biological productivity than many coastal regions. The coast is rich in varieties and numbers of marine life forms, however. Extensive and highly diverse coral reefs fringe its narrow shelves shores. Species-rich mangroves with their commercially important oysters, crabs and mullet abound near river estuaries and along the coasts, particularly those of Mozambique, Tanzania, Kenya and southern Somalia. The region's people are dependent to a significant extent on coastal resources. Fisheries rely on the trawlable inter-reef areas and the species-rich mangroves with their commercially important oysters, crabs and mullet. Coastal ecosystems are important economically for tourism and recreation. Threats In 1981 a UNEP fact-finding mission to East Africa identified large-scale erosion, oil pollution, damaged coral reefs, ruined mangrove swamps, pollution from fertilizers and threats to precious marine animals as the major environmental problems in the region. The list of threats to the environment has changed little since then. A workshop in 1997 listed domestic sewage, solid domestic waste, habitat degradation, agrochemical pollution and industrial waste pollution. The region remains characterized by vulnerable economies, large populations with a high rate of population growth, and areas subject to environmental stress. Pollution The important and heavily fished reef zone close to shore is particularly vulnerable to pollution and silting. Oil is a major pollution threat to coastal ecosystems, owing to the heavy use of the tanker route along the East African coast. On any given day there are hundreds of tankers in the Region, many of them Very Large Crude Carriers (VLCCs). Slicks are brought in from spills in the open ocean by coastal currents, while operational discharges from ships and refineries add to the load. In recent decades, the growth of industry has brought an increasing volume of effluents to coastal waters. The use of agricultural chemicals has continued to grow, and sewage treatment continues to be inadequate in many parts of the region. Some species of marine animals are already endangered as a result of human activities, particularly the dugong or manatee, which is often caught in fishing nets and drowned. Marine turtles continue to decrease in numbers as their eggs are poached and the adults are killed for their meat and decorative shells. Eastern Africa is also undergoing an extraordinary rate of urbanization. As the cities have become overcrowded, water supplies have proven insufficient, and systems for drainage, sewerage and refuse disposal inadequate. Domestic sewage is discharged directly into rivers and in some cases the sea. Although industrialization remains slow relative to other parts of the world, it takes place without proper environmental impact assessments legislative controls, leading to further pressure on the environment. Rivers, creeks and the sea have become dumping sites for industrial wastes. Industries of major environmental concern in the region include textiles, tanneries, paper and pulp mills, breweries, chemical factories, cement factories, sugar factories, fertilizer factories, and oil refineries. In some countries, slaughter houses near the sea are a serious source of marine pollution. Desertification Long drawn out droughts, over-grazing and poor agricultural practices, deforestation and reclamation of wetlands for agriculture are all combining to bring about desertification in the coastal areas of East Africa. The continued high population growth rate is placing pressure on land beyond its carrying capacity, and driving out the traditional nomadic practices which allowed for environmental recovery. Livestock development is seldom accompanied by proper pasture management, leading to desert conditions in areas of concentration. When these destructive pressures occur in semi-arid areas with shallow soils, desertification and desert encroachment can becomes irreversible. The semi-arid parts of Eastern Africa are particularly vulnerable. Coastal degradation and erosion Human encroachment and activities such as animal husbandry and agriculture are rapidly degrading the coastal environment of Eastern Africa, resulting in deforestation, destruction of mangroves and disappearance of other vegetation; a decline in soil fertility, and the death of wildlife. Marine resources are directly threatened by these activities. Mangroves were once common in sheltered bays and estuaries, providing shelter to many important fish species and prawns. They are now threatened by intensive cropping to provide firewood, poles, tannin, medicinal products, paper pulp and timber, and to open up new space for aquaculture and salt production. Mangrove swamps are also threatened by fluctuations in the amount of fresh water and sediment reaching them caused by upstream hydraulic works, and indirectly by destruction of protective reefs.poles, firewood and by large-scale clearing for salt production. Coral reefs have been damaged by excessive siltation resulting from poor agricultural practices, deforestation along riverbanks, and the dredging and and dumping associated with harbour development. Many were damaged by fishing with dynamite and poison, especially before these methods were outlawed in part of the region. Tourists collect coral as souvenirs. More recently the bleaching of corals has become a severe problem. The shoreline in most of the region is receding as a result of coastal erosion: the shoreline retreat over parts of Tanzania has been estimated at between three and five metres per day. Barrier islands are particularly vulnerable to rising sea levels. Climate change A task team report on the implications of climate change for the Eastern African region (see UNEP: Potential impacts of expected climate change on coastal and near-shore environment. UNEP Regional Seas Reports and Studies No.140 (UNEP, 1992.) concluded that the region's low-lying coastal areas and marine ecosystems, water resources, terrestrial ecosystems and human settlements and coastal infrastructure are at risk as a consequence of climate change impacts. The economies of the region are dominated by agriculture. Fishing is an important source of food and contributes to the economy of the majority of the countries. Tourism is an important activity. The effects of climate change will be felt everywhere, perhaps most obviously in altered patterns of rainfall, coastal weathering, atmospheric pressure and evaporation. The spatial and temporal distribution of storms and cyclones will change their paths and frequency, and could well increase in intensity: Some scientists believe the terrible floods of early 2000 in Mozambique are but a taste of worse to come. Besides the direct toll on human lives, there will be impacts on coastal habitats such as coral reefs, lagoons, and mangroves. The reefs will be vulnerable to wave action and sea-level rise as well as sedimentation. Their destruction will lead to a decline in natural coastal defences and further encourage coastal erosion. The quality and quantity of water available from rainfall, rivers and ground water will be affected by changes in the distribution and amount of rainfall, evapo-transpiration, surface runoff, river discharge, recharge, and aquifer volumes. Drier and hotter conditions would place an inordinate pressure on water resources. Ecosystem effects could include latitudinal and altitudinal shifts in plant and animal species as well as, loss of biodiversity due to water scarcity and arid soil conditions. While agriculture might benefit somewhat from a global increase in CO2, moisture deficits would lower crop yields and require additional irrigation. Sea-level rise would increase the intrusion of saline water up river mouths and also decrease the area available for cultivation on low-lying coastal areas and river estuaries. Fisheries would be affected by changes to the breeding and migratory habits of most fish, hence, year to year variability of stocks could increase leading to a planning and management problems. Socio-economic activities, and infrastructure such as port facilities, waste disposal, roads, are already under stress. Climate change would create additional stress, hence reducing economic performance and growth. The human factor A critical problem in the region is the rapid rate of human population growth in some countries. Infrastructure has a hard time keeping up, with resulting strain on educational facilities as well as resources. Much of the population resides in the coastal areas, employed by the light industry located along the coast and others in the tourist industry. Most of the region's economies rely on agriculture and tourism which together contribute close to 50% of the gross domestic product. Tourism specifically is a main earner of foreign exchange in the coastal parts of most of the countries in the region. The population is unevenly distributed over the region. Northern Mozambique and Merca northwards of Somalia are almost uninhabited due to extreme climate conditions. Both mainland and island populations are concentrated on the coasts, where population growth is higher than average for the region as a whole, largely owing to migration, urbanization and favourable employment opportunities. The majority of these populations are employed by the light industry located along the coast and others in the tourist industry. Most of the economies rely on agriculture and tourism which together contribute close to 50% of the gross domestic product. Tourism specifically is a main earner of foreign exchange in the coastal parts of most of the countries in the region. The extremely rapid rate of population growth in some of the countries in the region is a critical factor, and the resulting pressure on social amenities, notably in the coastal cities, has become very high. The infrastructure is unable to keep pace with the population growth rate; educational facilities are no longer adequate and the resource base to support the required expansion programme meagre. There is great disparity in per capita income in the countries of the region for a variety of political and environmental reasons.

#### Biodiversity loss in specific hotspots causes extinction and disease

Howard 11 [(lead of Ecosystem Service and Poverty Alleviation Project, Wageningen Univ. Department of Social Sciences Faculty) “Tipping Points and Biodiversity Change: Consequences for Human Wellbeing and Challenges for Science and Policy” Draft Prepared for the Kavli Seminar“Addressing Global Tipping Points”13-15 March 2011] AT

In the 20 th century, we became aware that the fate of biodiversity and the fate of humans are intimately interconnected. Before this, only some religions (and a few philosophers) predicted the end of life onEarth or human extinction through different versions of Armageddon, which was generally caused by thedivine consequences of wayward human behaviour. Darwin’s theory of evolution provided the means to un-derstand continual species extinctions, and scientists began to unearth the evidence of previous mass extinc-tions. However, the idea that extinction might extend to the human species was not taken up until the 20 th century, when it was argued that all species invariably become extinct (Raup 1991). Scientists came to un-derstand that the human species could disappear through catastrophic natural events, much as the dinosaursdisappeared, as a result of bolide impacts or large-scale volcanism. A secular concept of self-annihilationemerged less than 50 years ago with the spectre of global nuclear holocaust, which would also render muchother life on Earth unviable (see e.g. Robock et al. 2007), and where the life that remained would be distinct-ly antithetical to humans. Many now argue that there are other catastrophic threats to the human species,some of which threaten life on Earth more generally (Rees 2003, Posner 2004, Bostrom & Cirkovic 2008,Al-Rodhan 2009). We can only speculate whether the sixth mass extinction of species that appears to be un-derway has implications for the continued evolution of the human species, but we do know that it is the syn-ergies and feedbacks between global environmental change and biodiversity change, combined with mala-daptive human responses to that change (e.g. global nuclear conflict; unintended effects of technological re-sponses), that leads to the most catastrophic scenarios.Critical questions that arise when considering biodiversity change, the threats that it poses to humanwellbeing, and the challenges that it presents for mitigation and human adaptation, are whether there are crit-ical thresholds or ‘tipping points’ related to biodiversity change, and whether such tipping points can lead or contribute, directly or indirectly to global tipping points or whether they ‘only’ have implications at local or regional scales. If there are such tipping points, what types of implications do they have for human wellbe-ing? For whom, where, and when? Further, can such tipping points be avoided, and are we prepared to dealwith (adapt to) them if they cannot?With biodiversity change, there are a number of vulnerabilities to which the majority of the globe’s human population are exposed not only because they are impacted by this change at local level, but also because even local changes can have global repercussions due of global interdependencies. One is the rapidemergence and transmission of new infectious diseases and pests that both threaten plants and animals (and thus the humans that depend upon them), as well as humans directly (e.g. Chivian & Bernstein 2008, Pong-siri et al. 2009, Keesing et al. 2010, Sharma 2010). A second is invasive species, where species disperse be-yond their ‘normal’ range, invade many different regions on different continents, affecting the invaded eco-systems in highly unpredictable ways (e.g. GISP n.d., Walther et al. 2009, Perrings et al. 2010). Both maycontribute strongly to a third such vulnerability, which is addressed here, presented by tipping points that may emerge at regional scale, such as the loss of the Amazon rainforest or the collapse of coral reefs, that can have extra-regional or even global repercussions not only due to the loss of species and ecosystems, but as well due to the loss of some of the ecosystem services that these provide e.g. as CO 2 sinks, which creates synergies with phenomena such as climate change and ocean acidification. Finally, the fourth vulnerability is posed by human maladaptation to any of these dynamics, where maladaptation can exacerbate biodiversity change and can lead to other negative effects for human welfare and ecosystems. Conflict over dwindling biological resources and ecosystem services is likely to become pervasive, and conflict over the understand-ing of the causes and effects of such change are likely to be just as serious. The global security implications of climate change are of great concern and are being assessed (e.g. GACGC 2007) but, to our knowledge, no such assessment exists for biodiversity change. Many of the global, regional, and national institutions that inthe past have evolved to manage human-biodiversity relations have so far been shown to be relatively inef-fective in stemming biodiversity loss (see e.g. CBD 2010) and thus they are likely to be even more ineffec-tive in dealing with surprises or with the large-scale repercussions of the loss of benefits, e.g. of food, andnew institutions will have to emerge if such threats are not to translate into local, regional, and even global,catastrophe. I argue that to successfully adapt to tipping points requires major changes in values, priorities, andinstitutions, particularly economic institutions: some of this change may be forthcoming but much is unlikelyto change quickly or profoundly enough to avoid such tipping points. A first step is to recognise the implica-tions of biodiversity change and potential tipping points for human wellbeing, which is currently impeded bycultural, cognitive and political barriers. A second is to prepare for such change, and a third is to prepare po-tential responses. II. Biodiversity Change and Tipping PointsA. Types, magnitudes and drivers of biodiversity change Aside from numerous potential sources of global catastrophe that could have such implications for life onEarth, we also find ourselves in a period when rates of species extinctions are estimated at 50-500 times background, which is the highest rate in the past 65 million years. The effects of ongoing rapid decline of biomes and homogenisation of biotas have been summarised as:changes in species geographic ranges, genetic risks of extinction, genetic assimilation, naturalselection, mutation rates, the shortening of food chains, the increase in nutrient-enriched nich-es permitting the ascendancy of microbes, and the differential survival of ecological general-ists. Rates of evolutionary processes will change in different groups, and speciation in thelarger vertebrates is essentially over…Whether the biota will continue to provide the dependa- ble ecological services humans take for granted is less clear…Our inability to make clearer predictions about the future of evolution has serious consequences for both biodiversity andhumanity (Woodruff 2001: 5471).The consequences for biodiversity and humanity depend in part on the timescale in reference. Some scien-tists argue that the Earth’s sixth extinction has already arrived, where an estimated loss of over 75% of spe-cies can be expected, possibly within 250 to 500 years (Barnosky et al. 2011), although others highlight thefact that projections of species extinction rates are controversial (Pereira et al. 2010). A mass extinction hardly bodes well for humans given the changes in the biosphere, in biomes and ecosystems, the associated pest and disease outbreaks, etc. that are associated with the different drivers of biodiversity change and the possi- ble critical thresholds or tipping points discussed below and in other papers presented here. Thus, the impli-cations of what is laid out below are magnified many fold and their effects become increasingly synergisticover time – 500 years is a very short period when we consider that Homininae appeared 8 million years ago, Homo sapiens 500,000 years ago, and modern humans 200,000 years ago – effectively, it constitutes only.25% of modern human history. Were humans to have a council of elders to deliberate the impact of our ac-tivities on future generations, it would certainly be extraordinarily alarmed and calling for radical transfor-mations as, indeed, are many scientists today.What is extraordinary about this possible 6 th extinction of species is that, since it is human-induced,it is not inevitable and depends, for example, on rates of climate and land-use change (Pereira et al. 2010).For the first time in the Earth’s history, a species is actually in a position to change the course of evolutionwrit large (Western 2001). This is reflected in the range of projected changes in biodiversity, which is very broad both because ‘there are major opportunities to intervene through better policies, but also because of large uncertainties in projections’ (Pereira et al. 2010: 1496). The possibilities and constraints to doing so arediscussed below and in other papers. Many scientists consider that the probability that we will change thecourse that evolution is currently on is low or very low without radical and immediate transformations invalues, knowledge, behaviour, markets, and governance. 3The causes of species extinctions and related change in biodiversity and ecosystem services can becharacterised as ‘synergistic stressors’ – climatic change coupled with ‘abnormally high ecological stressors’and ‘unusual interactions’ (e.g. between human-induced climate change, habitat fragmentation, pollution,over-harvesting, invasive species, pathogens and, some would add, the ‘expanding human biomass’ (Bar-nosky et al. 2011) although one could just as easilyadd ‘the expanding livestock biomass’ or ‘expanding biofuels production’)(Steinfeld et al. 2010, Wise et al.2009). Beyond this, humans have had a massive im- pact on the productivity, composition, and diversity of terrestrial ecosystems by changing the rates of supplyof major nutrients (nitrogen, phosphorus, and atmos- pheric CO 2 ), changing regional fire frequencies, [and]relaxing biogeographic barriers to species dispersal’(Tilman & Lehman 2001: 5433).Many human-dominated ecosystems are char-acterised by high natural resource extraction, shortfood chains, food web simplification, habitat and land-scape homogeneity, heavy use of petrochemicals andfossil fuels, convergent soil characteristics, modifiedhydrological cycles, reduced biotic and physical dis-turbance regimes, and global mobility of people, goodsand services (Western 2001) which give rise to theeffects in Box 1. In sum, humans are currently ‘appro- priating more than a third of all terrestrial primary production and, in so doing, have simplified or de-stroyed large portions of some types of ecosys-tems…many human environmental impacts are pro- jected to be two to three times stronger within 50years’ (Tilman & Lehman 2001: 5433). Notwithstand-ing their global significance, and not all human-dominated ecosystems are the same, not all humansare having the same impacts on biodiversity and eco-systems, which will also be taken up again below.According to the Millennium Ecosystem As-sessment (MEA) (Mace et al. 2005), at present habitatchange and fragmentation are the most important drivers of species extinctions, whereas invasive species andover-exploitation are the next most common, and disease, climate change, and pollution follow these in im- portance. Until recently, scientists generally agreed that species extinctions are principally due to habitat change and fragmentation, where it is human-induced land use changes such as agricultural expansion and especially tropical deforestation that have been the most important drivers, particularly since species richness is highest in tropical forests. As a result, most conservation activity has focused on reducing habitat loss andits impacts (Lewis 2006). Nevertheless, the major drivers of change in biodiversity vary per ecosystem type(Mace et al. 2005). For example, in tropical forests, habitat change has had a very high impact on biodiversi-ty over the past 100 years, followed by over-exploitation, whereas climate change, invasive species, and pol-lution have played minor roles. This is not the case in boreal forests, where nitrogen and phosphorus pollu-tion have been the major drivers.Since about the 1990s, however, there has been growing evidence that climate change is both interact-ing with these drivers and increasingly as a driver of biodiversity change in and of itself, to the point wheremost experts now agree that climate change will surpass habitat loss and fragmentation as the principle driv-er of species extinctions (Hannah et al. 2005, Thomas 2004, van Vuuren 2006). Climate change is not onlyincreasingly driving species extinctions: it also affects species composition in any given ecosystem throughchanges in range (distribution) of species, changes in timing of reproductions, and changes in the length of the growing season for plants (CBD 2007 and below). Today, scientists consider that it is the synergy be-tween habitat change and fragmentation and climate change that is the most threatening to biodiversity, giv-en that habitat loss and fragmentation can prohibit species from migrating and colonising new areas in re-sponse to climate change (Lovejoy & Hannah 2005).

#### Water shortage also causes escalating water wars – recent developments confirm likelihood of war

Rahman 11/1 [(Majeed, B.A. in Political Science from the University of Ghana, Professor of African Studies at the University of Wisconsin-Milawaukee) “The Geopolitics of Water in the Nile River Basin” Global Research, November 01, 2013] AT

Farming along the Nile is one of the major sources of livelihood for communities living along the concentrated Nile river basins, but the ensuing drought, famine, population growth and land degradation have impacted the water resources in the Nile river basin. The Environmental Protection Agency in its 2010 report also argued that land degradation and deforestation in the river basin due to excessive burning for land cultivation in many parts of the Nile River has virtually eroded the oasis making it extremely tough for cultivation and water conservation.15 Thus before the 1950s, there were fewer resentments on the Nile water resources by riparian countries, however with changing circumstances such as declining water resources, hunger, and diseases, riparian countries have decided to renegotiate themselves in order to access the Nile. Kenya together with Ethiopia are pioneering this process as seen in the cessionary address to parliament by the Member of Parliament for Kenya Paul Muite in 2004 who remarked “Kenyans are today importing agricultural produce from Egypt as a result of their use of the Nile water.” In a similar statement, Moses Wetangula, the assistant minister for foreign affairs remarked “Kenya will not accept any restriction on use of lake Victoria or the river Nile” and stated “ it however does not wish to be alone ranger in deciding how to use the waters, and has consequently sought the involvement of involved countries.”16 Methodology Conflict Theory and the Collier-Hoeffler Model Kofi Anan reiterated that “Unsustainable practices are woven deeply in to the fabric of modern life. Land degradation threatens food security. Forest destruction threatens biodiversity. Water pollution threatens public health, and fierce competition for fresh water may well become a source of conflicts and wars in the future.’’ This statement by Kofi Anan is buttressed by Amery when he alluded to the Egyptian Member of Parliament’s assertion that Egypt’s “national security should not only be viewed in military terms, but also in terms of wars over waters 17.” The horn of Africa has been bedeviled by conflicts, both interstate and civil wars for several years now. These conflicts are mainly concentrated on the north east and central Africa. While many of these conflicts have been disputes over land occupation in mainly oil rich areas of the Congo, others have been the issue of diverting water resources. This paper examines the water scarcity in the North East with an attempt to focus on Egypt and Ethiopia through the Collier-Hoefer model of theory of civil wars in order to construct the model on water scarcity with an attempt to reconcile the tensions over water resources and its effects on the people of the north East African people. There have been several applications and interpretations of the earlier conflict theorists propounded by earlier scholars such as Karl Marx, Lenin, and Weber. Collier-Hoeffer, also known as the C-H model is one of such interpretation of recent times. Their analyses on conflict is based on the framework of many variables such as tribes, identities, economics, religion and social status in Africa, and subjecting the data to a regression analysis and concluded that of the many variables identified in Africa and the examination of the 78 five year increments(1960-1999) in which conflicts occur, and of five year 1,600 inputs in which no conflicts occur, concluded that based on the data set that economic factors rather than ethnic, or religious, identities are the bane of conflicts in Africa. In complementing this model with the earlier conflict theory propounded by Karl Marx, Marx, recognized the significance of the social and interactions within a given society. These interactions according Karl Max are characterized by conflicts. Hence, the conflict between the proletariat and the bourgeoisie of the capitalist system forms a synthesis of the forces of the interaction within the system.18 Marx, again reiterated the fact that these social and human interactions is dialectical in the sense that when a dominant nation seeks to control dependent nations or peripheral countries what yields in consequence is the tension to rebel against the oppressor by dependent states in order to agitate for equitable and fair share of national resources. This point is consistent with the C-H model when they argued with empirical data on the causes of conflicts in Africa, and concluded that economic factors are the significant predictor of conflict in many parts of the African continent. Therefore, according to C-H, economic reasons contributed to a large extent the greater portion of conflicts in Africa19. While these economic reasons are varied and numerous due to the resources available in a given region and the allocation of resource whether naturally endowed or man-made, any form of competition to control these resources or allocation of resources will naturally generate two outcomes: tension and potential conflict, and cooperation. In this case, Egypt’s sole access to the Nile for centuries now has invariably gratified itself as the sole control of the Nile water resources. As a result of the 1929 mandate that gave Egypt absolute control of water resources in the Nile, she has worked to sabotage many riparian countries through other diplomatic and international treaties. Ethiopia has vowed to engage Egypt over the control of water resources in the Nile valley basin. This is exemplified in many water agreement initiated by Ethiopia and the other riparian countries to abrogate all previous agreement hitherto entered by Egypt. Consequently, Stars argues that the looming tension between Egypt and the riparian countries initiated by Ethiopia is a recipe for conflict in the North Eastern Africa20. For instance, these tensions are exemplified in Egypt’s response to Kenya’s assistant foreign affairs minister’s statement when Mohammed Abu Zeid, Egypt’s minister for water resources remarked that Kenya’s statements were a “a declaration of war” against Egypt and subsequently threatened Kenya of economic and political embargo.21 This looming tension among riparian countries is further worsened by Kenya’s continuing threat of engagement. In 2002, a senior Kenyan minister Raila Odinga, called for the review and renegotiation of the 1929 treaty which gave Egypt the right to veto construction projects on the Nile river basin, and said “it was signed on behalf of governments which were not in existence at that time.” This paper’s argument is further rooted in the idea that there are emerging players such as Kenya and Ethiopia in the horn of Africa as major hydro-political powers to engage Egypt’s hydro-hegemonic status. Prior to the Nile basin initiative in February 1999, Wondwosen, argues that there have been several similar water treaties such as the 1993 Technical Committee to promote development cooperation among riparian countries. Also, in 1995 the Nile Basin Action Plan was launched, and in 1997, the Canadian International Development Agency (CIDA) through collaborations with the World Bank attempted to foster cooperation among riparian countries to promote dialogue.22 This initiative including earlier treaties already mentioned shows the magnitude of the problem in the Nile basin, and of course the consensus necessary to equitably allocate water resources and thereby encourage development projects along the Nile. In 2010, for instance, Ethiopia announced that it was initiating a hydro-electric development projects in order to improve its country’s electric and energy needs. This announcement few days later saw resentment by Egypt and Egypt attempt to veto any such policy along the Nile. While Ethiopia is poised to making this project reality, Egypt has begun galvanizing international support in order to prevent Ethiopia from undertaking such projects. Cascao, argued that the asymmetrical flow of water resources in the Nile river basin and the access to physical flow of the blue Nile by Egypt and Sudan in the downstream has extremely heighten hydro-political tension over the Nile. These tensions have attracted the United Nations organizations interventions and other international organization on matters concerning the distribution and allocation of water resources in the Nile river basin and in which compensation are offered to other riparian countries unequal access to the distribution of water resources, especially those on the upstream who only benefit rainfall.23

#### African conflicts cause great power war

Glick 7 (Caroline – senior Middle East fellow at the Center for Security Policy, Condi’s African holiday, p. http://www.centerforsecuritypolicy.org/home.aspx?sid=56&categoryid=56&subcategoryid=90&newsid=11568)

The Horn of Africa is a dangerous and strategically vital place. Small wars, which rage continuously, can easily escalate into big wars. Local conflicts have regional and global aspects. All of the conflicts in this tinderbox, which controls shipping lanes from the Indian Ocean into the Red Sea, can potentially give rise to regional, and indeed global conflagrations between competing regional actors and global powers. Located in and around the Horn of Africa are the states of Eritrea, Djibouti, Ethiopia, Somalia, Sudan and Kenya. Eritrea, which gained independence from Ethiopia in 1993 after a 30-year civil war, is a major source of regional conflict. Eritrea has a nagging border dispute with Ethiopia which could easily ignite. The two countries fought a bloody border war from 1998-2000 over control of the town of Badme. Although a UN mandated body determined in 2002 that the disputed town belonged to Eritrea, Ethiopia has rejected the finding and so the conflict festers. Eritrea also fights a proxy war against Ethiopia in Somalia and in Ethiopia's rebellious Ogaden region. In Somalia, Eritrea is the primary sponsor of the al-Qaida-linked Islamic Courts Union which took control of Somalia in June, 2006. In November 2006, the ICU government declared jihad against Ethiopia and Kenya. Backed by the US, Ethiopia invaded Somalia last December to restore the recognized Transitional Federal Government to power which the ICU had deposed. Although the Ethiopian army successfully ousted the ICU from power in less than a week, backed by massive military and financial assistance from Eritrea, as well as Egypt and Libya, the ICU has waged a brutal insurgency against the TFG and the Ethiopian military for the past year. The senior ICU leadership, including Sheikh Hassan Dahir Aweys and Sheikh Sharif Ahmed have received safe haven in Eritrea. In September, the exiled ICU leadership held a nine-day conference in the Eritrean capital of Asmara where they formed the Alliance for the Re-Liberation of Somalia headed by Ahmed. Eritrean President-for-life Isaias Afwerki declared his country's support for the insurgents stating, "The Eritrean people's support to the Somali people is consistent and historical, as well as a legal and moral obligation." Although touted in the West as a moderate, Ahmed has openly supported jihad and terrorism against Ethiopia, Kenya and the West. Aweys, for his part, is wanted by the FBI in connection with his role in the bombing of the US embassies in Kenya and Tanzania in 1998. Then there is Eritrea's support for the Ogaden separatists in Ethiopia. The Ogaden rebels are Somali ethnics who live in the region bordering Somalia and Kenya. The rebellion is run by the Ogaden National Liberation Front (ONLF) which uses terror and sabotage as its preferred methods of warfare. It targets not only Ethiopian forces and military installations, but locals who wish to maintain their allegiance to Ethiopia or reach a negotiated resolution of the conflict. In their most sensationalist attack to date, in April ONLF terror forces attacked a Chinese-run oil installation in April killing nine Chinese and 65 Ethiopians. Ethiopia, for its part has fought a brutal counter-insurgency to restore its control over the region. Human rights organizations have accused Ethiopia of massive human rights abuses of civilians in Ogaden. Then there is Sudan. As Eric Reeves wrote in the Boston Globe on Saturday, "The brutal regime in Khartoum, the capital of Sudan, has orchestrated genocidal counter-insurgency war in Darfur for five years, and is now poised for victory in its ghastly assault on the region's African populations." The Islamist government of Omar Hasan Ahmad al-Bashir is refusing to accept non-African states as members of the hybrid UN-African Union peacekeeping mission to Darfur that is due to replace the undermanned and demoralized African Union peacekeeping force whose mandate ends on December 31. Without its UN component of non-African states, the UN Security Council mandated force will be unable to operate effectively. Khartoum's veto led Jean-Marie Guehenno, the UN undersecretary for peacekeeping to warn last month that the entire peacekeeping mission may have to be aborted. And the Darfur region is not the only one at risk. Due to Khartoum's refusal to carry out the terms of its 2005 peace treaty with the Southern Sudanese that ended Khartoum's 20-year war and genocide against the region's Christian and animist population, the unsteady peace may be undone. Given Khartoum's apparent sprint to victory over the international community regarding Darfur, there is little reason to doubt that once victory is secured, it will renew its attacks in the south. The conflicts in the Horn of Africa have regional and global dimensions. Regionally, Egypt has played a central role in sponsoring and fomenting conflicts. Egypt's meddling advances its interest of preventing the African nations from mounting a unified challenge to Egypt's colonial legacy of extraordinary rights to the waters of the Nile River which flows through all countries of the region.

#### International policy in Africa proves likelihood of war

Azikiwe 9/24 [(Abayomi, Editor, Pan-African News Wire) “US Wants to Stop China in Africa” The 4th Media 2013] AT

A political commentator says the United States has escalated military interventions in Africa in order to prevent China from gaining influence in Africa and maintain its dominance over the continent. The Pentagon, along with the Central Intelligence Agency as well as the National Security Agency, want to prevent China and other countries from gaining influence in Africa and “in a vain attempt to maintain US dominance” over the continent, Abayomi Azikiwe, editor of the Pan-African News Wire, told Press TV on Monday. “This of course, in the long run will not work because the US will be faced crises, as we see today in Somalia and as we see also in Kenya,” he added. “The United States, under both the previous government of George W. Bush, as well as the current regime of President Barack Obama, have started, and also escalated the intervention of the Pentagon in various African states,” the analyst said. A recent study has revealed even deeper US penetration in the African continent, Azikiwe said. “All of these interventions by the United States are clearly related to the strategic interest of the US in regard to the African continent,” he said. The Pentagon is reportedly preparing a list of targets for possible military strikes in Kenya and some other African countries aimed at targeting militants involved in Sunday’s deadly attack on a shopping mall in the Kenyan capital city of Nairobi. Somalia’s Al-Shabab fighters have reportedly claimed responsibility for the attack, saying it is in retaliation for Kenya’s military actions inside Somalia. Azikiwe also said that the US and other European powers have been “exploiting” East Africa’s oil and gas resources in recent months. He said these natural resources are “guiding US military policy towards the continent.”

#### Studies prove a shift to organic agriculture can solve famines and soil loss – economic conditions mean government support is key now

Andersson 10 [(Par, Masters Degree in Environmental Science, Linnaeus University; advised by Jan Herrmann, Associate Professor Senior Lecturer, Department of Biology and Environmental Science) “Sustainable Agriculture Modernization, Orongo Village, western Kenya” Examination Project Work, Environmental Science] AT

The yield output in Organic agriculture compared to conventional agriculture practices is dependent on the quantity of external inputs at the farm and how good the growing conditions are at the site. At initial good growing conditions and high input of external synthetic inputs, the conversion to Organic agriculture is going to decrease the yield by around 40%. With medium external input and normal growing conditions the yield will stay almost the same, 92%. In poorly developed agriculture system with no external inputs, like the one often seen in developing countries, the yield increase can be as much as 180% 17 of the normal. Globally a conversion to Organic agriculture is estimated to have the potential to increase the yield with 132%18. The International Food Policy Research Institute (IFPRI) says that “a conversion to Organic agriculture in Sub-Saharan Africa is likely to increase food availability and decrease food import dependency”. This is under the conditions of well maintained and well adapted Organic agriculture practices. Another factor that makes the Organic agriculture potential especially big in poor areas and developing countries is the annual input cost. Because Organic agriculture is not dependent on external, often expensive, inputs and most resources required can be found on the farm, the input cost is around 40% less than that of conventional industrialized farming19. The need for irrigated water is also substantially lower in Organic agriculture compared to conventional farming. The crop rotation technique practiced in Organic agriculture can also help increase food security in poor areas. The diversity of a crop rotation system has bigger resilience to deceases and pest attacks, compared to a mono-crop system, to unexpected events like drought, falling market price, pest attacks etc. compared to mono-crop systems because it is more probable that some crops can withstand the attack better than others and can still bring income and food for the farmer. Organic agriculture is now practiced all over the world with almost all main agriculture crops. Still less than one percent of the world agriculture is certified Organic and in Africa only 0.12 percent of all agriculture is Organic20. The potential for Organic agriculture is big in Africa and there is no doubt it can be practiced on a much larger scale because it has been under similar biophysical circumstances in other places, especially in India. There is also no doubt that it can be beneficial for low-tech small scale farmers who today greatly suffer from infertile land and soil erosion because of ineffective agriculture practices. But for a substantial increase of Organic farmers in Africa, the farmers need to be aware of the option of Organic agriculture and how it is practiced. If the big potential will have a chance of being utilized, it must be a promotion and information spread from governments and/or NGOs about Organic agriculture 1.2.3 Kenyan Organic agriculture and where the Kenyan government stands The Kenyan government has in many ways taken the high-tech approach to their agriculture problems. The Kenyan Agriculture Research Institute (KARI) is promoting the use of genetically modified crops like hybrid maize and so called “BT-cotton”. The Kenyan Ministry of Agriculture is promoting the newly formed African Agriculture Technology Foundation (AATF) that wants to boost income of small scale farmers by novel genetic modification approach21 . Organic agriculture has not been formally recognized as an option to increase food security. The Kenyan Ministry of Environmental has said he is ready to “support” Organic agriculture. 22 Kenya has no national Organic standard but the NGO Kenya Organic agriculture Network (KOAN), which today is the main promoter and supporter of Organic agriculture in Kenya, is close to finalization of a first draft. In the mean time U.S and EU standards are used. Organic agriculture is growing in Kenya but at a slower rate than globally. 1.2.4 Organic market The Organic market is one of the fastest growing markets in the world both in clothes and food. The Organic food market has been growing annually with 15-20 percent the last fifteen years23. The demand for organically grown agriculture products is high and there is no sign that the market will be saturated in the coming years. The Organic cotton market has grown even more dramatically with almost 85% growth annually between 2005 and 2008, from $583 million 2005 to $3.5 billion 200824. The demand for Organic cotton keeps on growing and projections say that the market will keep on expanding the following years. The biggest Organic market is in North America and the EU. Organic food and clothes often have a price premium. This is more common in western markets. If the African Organic product can be linked through export to the western market the farmer can get a much better price than at the local market. An example is the Organic cotton. Locally the Kenyan farmer sells his cotton at around 20 – 22 KES/kg ($0.3/kg)25. This can be compared to the world price average of cotton 2008, $1.21/kg26. In other words, the Kenyan farmer gets on average a quarter of the price locally compared to the average international cotton farmer. Knowing this, the benefits of accessing the international market is undeniable and the fastest way of doing that is today through the Organic market. This can greatly encourage the Kenyan farmer to start farm organically, but the encouragement can only happen under certain conditions. The farmers need to be aware of the possibilities and be connected to the Organic market by an organization with few middlemen and with an actual interest of helping the farmer. The present global financial crisis could have bad consequences on the growth of the Organic market because of the usual premium price on organically grown crops27. This can have a both good and bad consequence for the Organic agriculture in Africa. Of course the export market and the premium price will be harder to access. But this can work as a boost for the local market and decrease the dependency on the export market. The local market is a necessity for a sustainable spreading of Organic agriculture. The optimal development is that Organic agriculture can spread in Kenya without being dependent on western intervention and premium prices, so that the local market would be sufficient. And the growing of the local market for organically produced crops is dependent on the awareness of the present problems and causes of them. This can create a goodwill for locally and organically produced crops, and if the price premium is not there, the organic crop can compete on the same terms as the conventional grown crops. Important to mention is that the Organically produced crops have no disadvantage to the conventional cultivated crops and can compete as good on the normal market also. 1.3 The potential of Organic agriculture in Orongo Farming in Orongo village is today using very simple tools and techniques when cultivating the land. The agriculture technique involves no or almost no input of external fertilizers and the fertility of the land has shown a decrease during the past 20 years. Almost all reports that are available today are indicating that under the circumstances similar to the ones seen in Orongo village, Organic agriculture can enhance soil fertility and enhance the yield 28. By enhancing soil fertility and using Organic agriculture components like cover crops and crop rotation in the correct way, soil erosion problems can be decreased substantially also. Today more than 80 percent of Orongo village is totally dependent on agriculture for income and food security. Still, 30 percent are suffering from undernourishment and 70 percent live under $½ a day. This leads to the conclusion that Orongo village is in need of agriculture modernization. The villagers also see agriculture projects as top priority for the village (Table 1). My assumption is that a modernization can be done by using Organic agriculture techniques if the components are analyzed and adapted to the special circumstances in Orongo and if the knowledge about Organic agriculture is spread considering the local culture. If this can be done it can lead to:  An increase of yield that can increase food security and lower the percentage undernourished in the village.  That today‟s big soil erosion and nutrient leakage problem caused by the present agriculture techniques can be reversed by Organic agriculture.  That the diversity of crops and lack of harmful chemicals can have health benefits on both the local ecosystem and humans.

#### Contention 2 is solvency

#### Agriculture in Africa is weak – government funding is key

Kaplan 13 [(Marcus, Environmental Policy and Natural Resources Management; Chinwe Ifejika Speranza, PhD, Senior Research Scientist for the Center for Development and the Environment; and Imme Scholz, Deputy Director of the German Development Institute, Member of the advisory council of the Austrian Research Foundation for International Development, Member of the German Council for Sustainable Development) “Promoting Resilient Agriculture in Sub- Saharan Africa as a Major Priority in Climate-Change Adaptation” Part of the report “Trade and Environmental Review 2013” by United Nations Conference on Trade and Development. German Development Institute] AT

In addition to economic trends, such as greater international competition for land for various uses, fluctuating food prices, higher energy prices, and international trade policies, climate change seriously threatens the productivity of the agricultural sector and its contribution to economic and social development. The poorer people who depend directly on ecosystem services for their livelihoods are the most vulnerable to permanent changes in temperature and water availability, as well as to an overall higher variability in climatic patterns. They not only have less access to various types of resources, but they also have fewer opportunities for diversifying their livelihoods to include other income-generating activities in order to reduce their dependence on agriculture and other ecosystem services. One of the main reasons for the poor situation and the high vulnerability of farmers and agriculture in SSA is the long-term neglect of this sector by both national governments and the international donor community starting in the 1980s. Public spending on farming accounts for only 4 per cent of total government spending in SSA (World Bank, 2008), and the agricultural sector is taxed at a relatively high level. In addition, the share of the agricultural sector in official development assistance (ODA) declined from 18 per cent in 1979 to 3.5 per cent in 2004 (World Bank, 2008). Today, the importance of agriculture for economic growth has generally been recognized, and national, regional and international organizations are making greater efforts to support its development (Challinor et al., 2007; Hazell et al., 2007). In their Maputo Declaration of 2003, member countries of the African Union called upon African governments to increase investment in the agricultural sector to at least 10 per cent of their national budgets. However, most African countries are still far from reaching this target. Moreover, even though the sector is now receiving more attention, owing to the long period of neglect, the many challenges ahead will be difficult to overcome. Furthermore, most public transfers are largely aimed at mitigating climate change rather than supporting adaptation to its impacts: 79 per cent of dedicated multi- and bilateral funds were approved for mitigation projects (84 per cent if activities for reducing emissions from deforestation and forest degradation (REDD) are included), and only 14 per cent for adaptation 37 projects. Bilateral ODA shows a slightly different pattern, with 70 per cent approved for mitigation and 30 per cent for adaptation (UNER 2010). Moreover, most activities and funds focus on reducing emissions and increasing efficiency in the energy and transport sectors, while adaptation and mitigation in agriculture are still underfunded. Looking at bilateral ODA again, agriculture received only 1 per cent of all funds dedicated to mitigation, compared with 10 per cent for adaptation activities in 2009 (UNER 2010).

#### Thus the plan: The Republic of Kenya should enact policies to support a shift from industrialized to organic agriculture among small farmers within its territory.

#### That solves a shift to organics – empirically confirmed by Cuba

Mwaura 10 [(Michael, Jomo Kenyatta University of Agriculture and Technology) “Cuba: National policy for sustainable agriculture” Kenya for the People, Feb 6] AT

In the previous article, we took the position that sustainable agriculture was the way forward to help build vibrant rural economies. In this article, we will study Cuba as a success story in sustainable organic farming. This farming revolution was forced upon the Cuban people by their practice of agribusiness to serve an export market that collapsed after the Soviet Union withdraw support. This situation is eerily similar to what is being practiced in Kenya today by the growing of cash crops for export although not to such a grand scale. The article below has been gleaned from several sources. A brief history From 1492 to 1898, Cuba was a colony of Spain. Both the native people and the forest were annihilated to make way for large cattle and sugar farms in the hands of a few wealthy owners and worked by slaves. In 1898, the United States entered into the Spanish-American war, Spain was easily defeated, and Cuba was under US military rule from 1898 to 1902. Over the next few decades, U.S businesses and individuals acquired some of the best land and US marines were stationed in Cuba to protect US interests. Sugar production continued to increase in importance at the expense of food production, which caused greater reliance on food imports. Wealth was concentrated in a few hands, and the vast majority of Cubans continued to live in poverty without access to land or incomes sufficient to feed their families. On December 31, 1958, the Batista government was overthrown, and a socialist government took power. The expropriation of US property in Cuba led to a US policy of isolation. By 1960, the isolationist policies caused Fidel Castro to turn to the Soviet Bloc. By 1962, Cuba effectively was a Soviet satellite. Cuban agricultural policies followed the Soviet model—large monocultural state farms were highly mechanized and heavily reliant on chemical fertilizers and pesticides. The Soviet Union subsidized this industrial model by trading its oil, chemicals, and machinery for Cuban sugar at preferential rates. Then, in 1989, the Berlin Wall fell. Almost overnight $6 billion in Soviet subsidies to Cuba disappeared. At the same time, the US trade embargo tightened, and Cuba was plunged into an economic crisis that was further exacerbated by the United States passing the "Cuban Democracy Act," in 1992 which prohibited assistance to Cuba in the form of food, medicine, and medical supplies. State implemented reform Cuba radically changed the state sector in 1993; 80% of the farmland was then held by the state and over half was turned over to workers in the form of cooperatives-UBPC (Basic Unit of Cooperative Production). Farmers lease state land rent free in perpetuity, in exchange for meeting production quotas. A 1994 reform permitted farmers to sell their excess production at farmers' markets. The reforms emphasized five basic principles: • Focus on agro ecological technology: this was supported by the state/university research, education, and extensions system. • Land reform; state farms were transformed to cooperatives or broken into smaller private units, and anyone wishing to farm could do so rent free. • Fair prices to farmers: Farmers can sell their excess production at farmers' markets; average incomes of farmers are three times that of other workers in Cuba. • Emphasis on local production: Urban agriculture played a big part in this reform. More on this below. • Farmer-to-farmer training:this served as the backbone of the extension system. Urban Agriculture Another area in which an innovative approach has been applied is that of urban agriculture. The Cuban government promoted and nurtured the public enthusiasm for urban agriculture. It ruled that any unused city lot, even state-owned, could be taken over by citizens to grow food. Growers were permitted to sell their surpluses on the open market. Government programs were launched to help city folks learn to farm. Experts explained organic growing, composting, and natural pest control and water conservation. Shops were opened to sell seeds and supplies. An estimated 1,000 kiosks for fresh local produce were set up at farm gates and busy street corners throughout Havana. The popular gardens range in size from a few square meters to large plots of land which are cultivated by individuals or community groups. Production in other agricultural areas The reforms have not yielded dramatic results for sugar, meat, or dairy, nor for traditional import crops (rice and beans). Cuba continues to rely on food imports, as it has since it was colonized. Cuba buys rice from India and China, dairy products from the European Union, grains from South America and Eastern Europe, and meat from Canada and Brazil. Cuba has to buy these products from distant countries, adding on average 30% to the cost of food imports over what they would pay for US products. Effect on meat production Meat production and dairy production were hit particularly hard by the loss of subsidized Soviet feed and petroleum. The loss of petroleum meant that animal traction became a strategy to reduce reliance on farm machinery. Animal traction is also better for soil management, particularly given the smaller farm size after land was redistributed. However, the conversion to animal traction was impeded by lack of oxen and expertise. The solution was to prohibit slaughter of cattle without government permission (in order to build up the herd) and to create "schools" to train the oxen (and presumably farmers). Other government programs Social equity is a clearly a higher priority for the Cuban government than personal liberty. Despite being the second poorest country in the Americas, there is no widespread hunger; housing is generally free, if dilapidated and crowded; Cubans are one of the most educated populations in the world; and there is universal free health care. All Cubans have access to a basic (although minimal) diet through their ration card. Cubans supplement this with food they grow, barter for, or buy at farm stands, farmers' markets, or dollar stores. The Future It seems likely that Cuba will continue to promote agroecological practices and to expand urban agriculture simply because they are yielding results. The bad experiences with large agricultural operations, both before and after communism, make it unlikely that anyone could credibly promote a return to large, high-input operations as a matter of national policy. The positive results that farmers, university researchers, and extension are getting from the transformation of Cuban agriculture will likely encourage them to continue to pursue sustainable practices whatever comes next. Cuban people are eating better and healthier than before, though things are far from perfect. However, the relevant comparison is to other Latin American countries; Cuba simply does not have the widespread hunger, destitution, and suffering that are commonplace in countries with much higher GDP per capita. Conclusion There are many lessons we can learn from Cuba for Kenya: • The government giving citizens plots to farm on in urban areas could go a long way to alleviate hunger and stabilize our food supplies in the urban areas. • The food ration card to ensure all Kenyans get access to a basic diet is a positive. The government could contract local and rural farmers for this program. • A barter system, food for food or food for services by urban and rural farmers would be an idea worth researching and implementing. • The possible establishment of a sustainable agricultural department by the government to train urban and rural farmers in organic agriculture • Discounted availability of seeds and agricultural supplies would help potential urban and rural farmers.

#### More solvency evidence

Hoffmann 11 [(head of the Trade and Sustainable Development Section at the secretariat of the United Nations Conference on Trade and Development, member of the International Task Force on Harmonization and Equivalence in Organic Agriculture, editor in chief of UNCTAD's annual Trade and Environment Review) “ASSURING FOOD SECURITY IN DEVELOPING COUNTRIES UNDER THE CHALLENGES OF CLIMATE CHANGE: KEY TRADE AND DEVELOPMENT ISSUES OF A FUNDAMENTAL TRANSFORMATION OF AGRICULTURE” UN Conference on Trade and Development Discussion Paper No 201, Feb 2011] AT

First of all, it is important to remove or modify the existing tax and pricing policies that generate perverse incentives for sustainable production systems, such as overuse of pesticides, fertilizers, water, and fuel or encouraging land degradation. There should be a policy shift towards significantly increasing the efficiency of fertilizer and agro-chemical use and their replacement by soil-fertility-enriching (and carbon- absorptive) production methods that rely on multi-cropping, integrating crop and livestock production and the use of locally available bio-fertilizers and bio-pesticides. As most developing countries import all or the majority of the fertilizers and agro-chemicals used, a drastic reduction of their consumption therefore not only benefits the environment, but also leads to a reduction of the import bill and agricultural production costs.62 In India, for instance, overall public expenditures on agriculture have remained at approximately 11 per cent of agricultural GDP, while the share of subsidies for fertilizer, electricity and for price support of cereals and water has steadily risen at the expense of investments in public goods, such as research and development, irrigation, and rural roads (see below). Agricultural spending is about 4 times greater on subsidies than on such important public goods. In Zambia, only about 15 per cent of the 2003/2004 agricultural budget was spent on research, extension services, and rural infrastructure (World Bank, 2008: 115). Therefore, reallocating spending on private subsidies to public goods must be a central element of policy reform to encourage sustainable agricultural production. In addition to removing ‘perverse’ incentives, governments may also consider fiscal or market-based measures (e.g. GHG emission trading systems) to internalize GHG costs (for more information in this regard, see Kasterine and Vanzetti, 2010: 91–93). Second, assuring stability in land management and tenure systems is a very important policy issue. As the UN Special Rapporteur on the Right to Food put it “in a number of countries, the Green Revolution was effectively a substitute for agrarian reform: instead of encouraging increases in food production by redistributing land to the rural poor, it did so by technology” (De Schutter, 2009). In particular, small farmers need stable tenure systems to invest in soil fertility and production methods for regenerative agriculture.63 Agrarian reform should therefore continue to take centre stage on the political agenda of governments.64 This should include issues such as recognizing customary tenure, make lesser (oral) forms of evidence on land rights admissible, strengthen women’s land rights,65 allocate more land to smallholders with secured tenure, and establish decentralized land institutions (for more information, see World Bank, 2008: 139ff). Third, the share and effectiveness of public expenditures for agricultural development must be significantly increased. Public agricultural spending has been particularly lacklustre in agriculture-dominated developing countries (see table 2).66 Policymakers need to target investments carefully, putting resources into areas that have a large impact on improving physical and R&D infrastructure, linkages between farmers, and greater investment into extension education and services.67 While national-level investment in improving the transport and storage systems remains important, particular emphasis should be placed on developing locally shared infrastructure and improving value-added activities of farmers, to name but some key issues. Savings from the removal of perverse incentives can significantly reduce additional resource requirements in this regard. There could also be incentives in the form of (time-limited) land tax exemptions or lower cost credit to stimulate private investment. Such approaches are administratively simpler than subsidies and may not run afoul of WTO rules (Herren et al., 2011). According to the President of the International Fund for Agricultural Development (IFAD), “global food security can only be achieved through significant new investment in smallholder agriculture” (cited in Mactaggart, 2010b). Furthermore, governments need to pay special attention to strengthening the agricultural innovation and extension system for ecological farming methods 68, with particular emphasis on providing innovative, locally adapted and locally sourced solutions for smallholders.69 Paving the way for mainstreaming a mosaic of sustainable agricultural production methods requires integrative learning, in which farmers and researchers in agro-ecological sciences work together to determine how to best integrate traditional practices and new agro-ecological scientific discoveries. For this to take place, new channels and platforms for information exchange and skills’ transfer need to be developed (Herren et al., 2011). Enhanced regional and international South-South co-operation could play a useful role in strengthening agricultural R&D and extension capacity. The establishment of more regional centres of excellence, regional public research institutions and closer collaboration among existing research centres would be valuable steps in this direction (UNCTAD, 2010b).70 While public investment in agricultural research and development tripled in China and India in the 1980s and 1990s, it increased by barely a fifth in sub-Saharan Africa (declining in about half of these countries) (Pardey et al., 2006). With the exception of Brazil, India, West Asia and developed countries, the share of public R&D spending in agricultural GDP stagnated or even declined (see table 3).71 Fourth, agricultural policy is generally implemented by up to a dozen of governmental institutions. Achieving policy coherence and effective coordination of their activities are important for the paradigm shift towards regenerative agriculture as outlined above. Furthermore, coordination between environmental, natural resource, energy and agricultural policies is needed to maintain a consistent set of incentives for adoption of sustainable management systems and to facilitate cross-sectoral interactions, which are often involved in carbon crediting from agriculture. According to Stolze (2010), the creation of Support Platforms, which bring together potential public and private partners, supported by relevant experts, to jointly assess and further develop the priority activities identified may be worth considering. Fifth, regulations in the financial sector that facilitate the flow of funds for mitigation benefits to local communities are also important and have been a barrier to paying farmers for environmental benefits. Financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders’ ability to compete. Financial constraints originate from the lack of asset ownership to serve as collateral and the reticence to put assets at risk as collateral when they are vital to livelihoods. The demise of special credit lines to agriculture through public programmes or state banks has left huge gaps in financial services, still largely unfilled despite numerous institutional innovations (World Bank, 2008: 13). Therefore, special credit facilities (including micro-credit), community-oriented financial services, and the effective functioning of rural development banks are important in this regard. Another mechanism for facilitating access to financing for sustainable agricultural development is the broadening of payments for environmental services.72 Watershed and forest protection, for instance, create environmental services (clean drinking water, stable water flows to irrigation systems, carbon sequestration, and protection of biodiversity) for which providers should be compensated through payments from beneficiaries of these services. Interest in the widespread use of payments for environmental services has been growing, particularly in Latin America. In Nicaragua, for example, payments induced a reduction in the area of degraded pasture and annual crops by more than 50 per cent in favour of silvo-pastoralism, half of it by poor farmers (World Bank, 2008: 16). Sixth, small-scale farmers, their networks and sustainable production methods must again become an explicit component of national development strategies and an important target for development assistance (for more information, see Cook, 2009). Seventh, strengthening the performance of producer organizations and empowering the capacity of local communities should also figure prominently on the agenda of governments. Collective action by producer organizations is important for building research and skill capacity, reducing transaction costs, increasing market power, and strengthening representation in national and international policy forums. For smallholders, producer organizations are essential to achieve competitiveness (World Bank, 2008: 14). Strengthening the capacity of local communities in their stewardship of biodiversity, conservation of rangelands and fragile agro-ecological zones must be recognized as an essential strategy. Therefore, a policy framework around the stewardship of biodiversity at all levels needs to be created. Local communities can also play a very pro-active role in facilitating exchange of local knowledge, its blending with modern scientific tools and related dissemination through farmer-field schools, participatory plant breeding and community seed banks. Local communities can also be instrumental in promoting the de-centralized use of bio- and other renewable energy sources.73 Finally, agricultural mitigation and adaptation actions should be high priority candidates for being integrated into Sustainable Development Policy and Measures (SD-PAM), Nationally Appropriate Mitigation Actions (NAMAS), and National Adaptation Programmes of Action (NAPAs). According to Stolze (2010), priority should be given to adaptation measures that bring about mitigation consistent with sustainable development objectives. The integration of agricultural mitigation programmes into agricultural development strategies will need to be part of the overall effort to improve the sector’s performance and the livelihoods of small farmers (FAO, 2009a).74 The role of agriculture has to be closely interlinked with overall national development strategies (or plans) to bring about the structural transformation required for effective climate-change adaptation and mitigation.

### 1AC BioD Long

#### Contention 1 is biodiversity--- we’ll isolate 4 scenarios

#### First, deforestation – current industrial methods of agriculture in Sub-Saharan Africa cause massive soil loss which causes deforestation – this is independently key to prevent a total collapse of agriculture which leaves millions starving

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Today 80 percent of all Sub-Sahara Africans are farmers and approximately 60 percent of these rely totally on agriculture for food and economic security1 . Sub-Sahara Africa is the place on Earth with the lowest food security in the world, more than 200 million people are suffering from undernourishment 2 . The high population growth is escalating the pressure on the agriculture land, land that already seems to be unable to feed all its inhabitants. Most of these farmers are small scale farmers using very simple techniques and having no access to modern agriculture knowledge and techniques. Africa is today the continent that, with a big margin, gets least yield from a hectare of land 3 . Asia gets on average three times more yield from one hectare of land and countries in the European Union and North America get on average 4.5 times more yield4 . This is not because Africa in any way has less fertile land or bad conditions for agriculture, quite the opposite, Africa has vast lands available for agriculture. But it is because of the agriculture techniques used for cultivating the land. Africa is also the poorest and least developed of all continents 5 and there is a strong correlation between yield and money input in the agriculture sector. This is partly explained by the high input of off-farm components like synthetic fertilizers and synthetic pesticides in industrialized agriculture used in western industrialized countries. These inputs are expensive but necessary in highly effective mono-crop agriculture systems to meet the high nutrient demand. The usage of this kind of system without the adding of external nutrient sources will fast deplete the land of nutrients and Organic matter and will be devastating for soil fertility. Many of the agriculture practices used in Africa are attempts to copy the western way of performing agriculture. This is for one part a colonial rest where western countries introduced industrialized agriculture to Africa but also different African governments´ misdirected attempt to enhance the agriculture output up to the much needed western standard by using western techniques. Using western agriculture techniques is very unlikely to work in western Africa, as being very different, based on other economic and biophysical realities. This is why badly adapted, ineffective and environmentally harmful agriculture techniques can be seen in Africa. It is undeniable that the present agriculture system in Africa is unsustainable and is really not working under the African conditions. There are alternative agriculture techniques available to the African farmer, but the spreading of the information and a convincing teaching of these systems involve a big cost. This also explains the correlation between yield and money input in the agriculture sector. Modernizing the African agriculture system considering the local economic, cultural and biophysical conditions is a key factor on enhancing the yield per hectare. Undernourishment cannot only be explained by the lack of food. Politically stable countries in the sub-Saharan region that had time to build up distribution channels and market infrastructure show a lower percentage undernourished than countries that had poor and unstable political power with the same amount of food produced6 . This shows the importance of not only good agriculture practices but also the importance of a working market system and good governance to lower the number of undernourished. In the sub-Saharan region the percentage of undernourished dropped marginally from 35 to 32 during the last decade 7 . This number might seem positive, but during the same period the environmental degradation has been enormous. The explanation of the decrease of undernourished is only by a fraction explained by better use of the existing agriculture land and better distribution but rather on the exploitation of new areas and the overuse of old agriculture areas. As a proof for that stands the rapidly accelerating problems of deforestation and soil erosion which both are strongly correlated with bad agriculture practices (see section 2.4 Soil erosion). According to the Food and Agriculture Organization (FAO) of the UN, Africa has the highest percentage of forest loss of any continent and the main reason, about 60 percent, for that is said to be the conversion to new agriculture land 8 . The organization “World rainforest movement” states that 10 percent of Africa´s forest disappeared only between 1980 and 1995. In Kenya only 3 percent of the indigenous forest are left. In Rwanda around 40 percent of the land is considered at high erosion risk and cannot be cultivated9 , a big increase compared to 20–30 years ago and this tendency can be seen in almost all sub-Sahara Africa countries. The bad agriculture practices used in sub-Sahara Africa so far been functioning because of the stock of good soil and abundance of trees created over times past. This stock is rapidly running out during a time when more people than ever are dependent on it. To change the agriculture before the soil stock is running out is especially critical in the poor rural areas of Africa. Poor smallholder farms in Africa cannot afford the synthetic fertilizers that can be a temporary way of postponing the consequences of an infertile and arid land. That is the last possibility and without that and no new land to exploit, the poor farmer is in a very serious situation. The prevailing system has encouraged the overuse and exploitation of new land, which is the practice that has generated most income for the farmer. Farmers who have been trying to be sustainable and restricted the output yield to the natural input of nutrients and Organic matter, have been competing with farmers who get a higher quantity of yield because of overuse and overexploitation. With the fluctuating market price on agriculture crops depending on the supply the sustainable farmers with the lower yield are left with a bad income, and many of these farmers have been forced into unsustainable practices to get an income big enough to support their family. “The tragedy of the commons” dilemma can be seen where the limited shared resources are being destroyed by multiple individuals acting in their own interest even when it is clear that it is in none‟s long term interest for this to happen10 . A big majority of the farmers are small scale farmers with only a few acres of land 11. All these small scale farmers are competing with each other on the same market with the same product. With high competition and high asset, the price is most certainly going to be low. When there is an excessive amount of the product relative to the demand there is a risk that some farmers will not get their product sold. So the farmer who puts a price according to what he needs to get a decent living standard from his income is at risk of not getting any buyers when the neighboring farmer is willing to sell for less. Then the first farmer must be prepared to lower his price, and at the same time much of his tangible living standard tightly correlated with his income, to get any of his products sold. This race continues until all farmers come to the point when they are no longer able to lower their price because this will deny them even the most minimal living standard. The competition can get even worse by international aid in the form of free agriculture products. This can have devastating effects on the local market price of agriculture products and therefore the living standards of small-scale farmers12 .

#### Deforestation from agriculture destroys Kenyan forests, a crucial biodiversity hotspot – also, agriculture kills bees

Obare and Wangwe no date [(Lynette, Assistant Lecturer at Strathmore University, Department of Geography) “Underlying Causes of Deforestation and Forest Degradation in Kenya” Forest Action Network] AT

Kenya’s forests are rapidly declining due to pressure from increased population and other land uses. With B of the country being arid and semi-arid, there is a lot of strain on the rest of the land since the economy is natural resource based. The productive area which forms about 20% of the country’s area falls in the medium and high potential agro-ecological zones and is under agriculture, forest and nature reserves. According to FAO Forest Resource Assessment 1990, Kenya is classified among the countries with low forest cover of less than 2% of the total land area. The dwindling forest cover has a severe effect on the climate, wildlife, streams, human population especially forest dwellers. 1.1 Introduction Mau Forest Complex is located in the Rift Valley province, about 200 km to the south-west of Nairobi and straddles four Districts: Kericho, Nakuru, Bomet, and Narok. It lies in the montane rain forest region which has a good potential for closed-canopy growth. The forest contains the largest remaining block of moist indigenous forest in East Africa covering an area of 900 km². The forest is gazetted and is under the managerial custody of the State's Forest Department. It was first gazetted in 1932 by the colonial government. Many alterations to the forest cover have taken place since it was first gazetted. These have resulted from excisions, additions, and boundary alterations. Bioregion The Mau forest is situated on the Mau escarpments in the Great Rift Valley. It forms the upper catchment of Sondu, Mara and Ewaso Ngiro rivers, which drain into Lakes Nakuru, Baringo, Victoria, Naivasha, Natron and Bogoria. The Kenya Forest Master Plan (Ministry of Natural Resources, 1994), put the Mau forest catchment protection value at 806 million Shillings per year, which is the highest of all the watershed forests in the country. It is important to note that some of these lakes are inter-boundary for example Lake Victoria which straddles three countries in East Africa namely Kenya Uganda and Tanzania. River Nile originates from this lake and flows to the Mediterranean Sea. Biodiversity Flora The forest is also rich in bio-diversity and hosts several indigenous tree species like Olea africana, Dombea goetzenii, Acacia spp, and Bamboo spp. among others. The forest has been described as being a part of the Afromontane archipelago-like. It comprises of Afromontane Forest and Afromontane Bamboo at the higher altitude. Specifically, it comprises of secondary plant community derived from Rain forest formation after logging at one time in its history (KIFCON 1994). The initial vegetation was dominated by Neoboutonia macrocalyx, which is gradually being replaced by the climax species. Being on an escarpment, the vegetation in the Mau forest is distinct at different altitudes. Rainfall is higher and continuous on the western side with no marked dry season, and mean annual rainfall of 2,000 mm and above. On the steep slopes of the escarpment, there is a Moist Montane Forest, characterized by a mixture of evergreen, semi-deciduous and deciduous trees. The average canopy height in this area is about 20 meters. The commonest tree species are Cyathea manniana, Ensete ventricosum, Acanthus eminens and Lobelia gibberoa. The Eastern side, which lies in a rain shadow, experiences a bimodal rainfall distribution, peaking in April and again in July/August, and mean annual rainfall varying from 1,000 to 1,500 mm and there is a dry forest type of ecosystem. This forest comprises mainly of Juniperus procera, Hypericum revoltum, Olea capensis, Podocarpus latifolius and Dombeya goetzeni. Glades are also common in the Mau forest most of which are as a result of fire burning the vegetation. It is thought that the fires are usually deliberately started as a way of improving the pastures or to clear land for cultivation especially in area with bamboo forests. High mountain bamboo thickets, Arundinaria alpina, are found at the topmost parts of the forest. Polystachya eurygnatha is an archid endemic to Mau forest while Chionanthus mildbraedii is a shrub recorded to be found only in Kenya. Fauna Among the large animals found in this forest are Bongo, Yellow backed Duiker, Golden cat, Giant forest hog, Leopard, Hyena, Buffalo, Colobus Monkey, and Impala. The Yellow backed Duiker, the Bongo, the Golden Cat, Leopard and Elephants are some of the important mammals of international conservation concern. Other nationally endangered species found only in this forest are the Potto, the spotted Necked Otter, and the striped Hyena. The forest is also rich in a variety of birds and is ranked second among the forests west of the Rift Valley. There are no endemic bird species in this forest but it is said to represent the richest montane avifauna in the Eastern Africa. 173 species have been spotted in the forest. 1.2 Forest-Community Relationship. Mau forest is the home of the largest group of forest dwellers, the Ogiek. Since time immemorial, the Ogiek people have been living inside the Mau forest, depending on the forest for subsistence and shelter. They divided the forest among their clans using natural features like rivers, valleys or hills as boundaries. In the period between 1904-1918, the colonial government tried to evict the community from the forest, but without success. The forest was gazetted in 1932 while these people were still inside. Once again in 1941, the colonial government tried unsuccessfully to evict them after gazetting it but this only drove them further inside the forest because there was no communication between them and the government. They did not know what was expected of them. It was unheard of for the government to consult with the community and it is said that one government officer who tried it in 1935 was rebuked and sacked by his senior. The postcolonial government did not change its attitude towards the Ogieks. It tried to evict the people in 1972 and 1977/87. In 1972, the government succeeded in evicting the people but most of them moved back into the forest after only six months. During the 1977/87 evictions, the government instructed the people to congregate around the forest stations in order to be resettled elsewhere later on. A small percentage (about 25%) did this while others went deeper into the forest. In 1992 the government forcefully evicted all the forest dwellers who were still inside the forest and concentrated them at the forest stations and promised to allocate them land. To date, most of the Ogieks live at the forest stations but some moved to the riverbanks where they also practise subsistence farming. The local administration then alienated that part of the forest that had been converted into plantation forest, subdivided it into five-acre plots and allocated it to individuals. The Ogieks allege that those people allocated the land were not members of their community but from the area around the forest. The forest was still gazetted and under the custody of the forest department. The forest department was not involved in the clear felling of the forest and the allocation of the land. The communities living around the forest also depend on the forest especially during the dry weather. A case study done in Njoro area East of the Mau forest indicated that the farming community in this area utilise the plantation area to grow food crops especially vegetables during the dry seasons. There has been a negative environmental impact on the forest since the clear felling started. Wildlife corridors have been tampered with exposing the forest dwellers and forest neighbours to attacks from elephants. Land that is on a slope of more than 50 % gradient has been allocated to farmers with no measures to check the soil erosion. The Ogieks have always relied on forests as a source of livelihood. Honey harvesting, hunting, gathering of wildfruits and nuts from the forests have been their occupation. They started keeping livestock in 1952. All the Ogiek groups have lived in or near high forests. Forest resources played an important role in Ogiek culture rendering their conservation vital. Whenever the Ogieks moved in the forests, they used their traditional set-up to conserve it. These conservation measures that were passed on to the community by the elders include: Ensuring that there were no forest outbreaks Allowing only the experienced elders to make beehives from the trees, so that the barks used to make such beehives are removed in a particular way that conserves the tree. The most commonly used tree for this is Juniperus procera. Creating awareness on important tree species like Dobeya goetzeni, Olea euro, Olea hochstetteri which were used for honey and herbs. The community members were prohibited from cutting these trees. In order to manage the forest properly the Ogieks allocated blocks of forests to clans to use. The forest areas are first occupied by a clan which divides it according to the family tree. Each family gives a name to their part of the forest, for identification and awareness of other families and customary respect for boundaries; the boundaries are recognised according to the customary land tenure system, where rivers, streams, valleys, glades, swamps and hills serve as boundaries. The Ogiek land tenure system aimed at defusing feuds resulting from hunting and beekeeping rights. 1.3 Direct causes and actors leading to deforestation and forest degradation Clearing natural forests to establish plantations In 1930, parts of Mau forests were cleared for the establishment of forest plantations using mainly exotic species. These occupy about 10% of the forest. The Ogiek community have been receding into the natural forests when this happens as their lifestyle depends on natural forests. Most of these plantations found surrounding the indigenous forests have been cleared to pave way for agriculture. Without the protection offered by the plantation the indigenous forests are now threatened. Logging Saw millers obtain licences to permit them to practise logging especially within the plantations. They also have to pay logging fees to the forest department. These charges are very low and not revised often to reflect the current economic situation. The saw-millers do not stick to the guidelines on logging and the Forest department does not have the mechanisms to enforce the rules and regulations under the current retrenchment process. The forests have been logged extensively in a non-systematic way. There is no annual allowable cut established and no adequate yield regulation in place. Often, there is intensive selective cutting and overexploitation leaving behind an inferior stock to mature as a final crop. This leads to further forest loss as the Department cannot rehabilitate the areas where trees have been felled. Conversion of natural forests into agricultural land: The Shamba system The Shamba system is adopted from the Taungya system of South America. It was devised by the Forest Department (FD) in 1943 to facilitate plantation establishment. This was prompted by the acute land shortage faced by communities after colonisation, and a need to reduce plantation establishment costs by the Forest Department. It was also meant to provide food security to those who practised it. Under the Shamba system, the cultivators were incorporated into the FD through employment and were permitted to clear and cultivate cut over indigenous bush cover from a specified land area; usually between 0.4-0.8 ha per year. This is done with the agreement that tree seedlings are planted on this land, and subsequently tended through weeding, pruning and safeguarding against game damage. In return the FD provided the resident cultivator with employment, social amenities and land for the cultivation of annual crops such as maize, potatoes, beans, peas and other vegetables. Cultivation proceeded until a time when tree seedlings were large enough to shade, and thus inhibit the growth of annual plant crops; usually a period of 3-5 years. The extent of the Shamba system was restricted to the high potential areas, comprising about 3% of Kenya's land area, and representing 12% of Kenya's total agricultural land. These areas are endowed with fertile soils of volcanic origin and a high annual (>1000 mm) rainfall with a bimodal distribution. Clearly, the Shamba system was an important arrangement which enhanced and sustained the food security of otherwise landless peasants. The system was discontinued in 1986 chiefly due to an expanded human population whose demand for forest land allocation exceeded the initial FD objective of plantation establishment. In addition, illegal activities (e.g.. forest clearing, tree poaching, hunting) from the resident cultivators and their families jeopardised forest protection and management. Interestingly, resident cultivators in forest areas with high wildlife populations voluntarily gave up the practice due to crop destruction and livestock predation. After the Shamba system was stopped, communities living around the forest moved in and settled in areas that were cleared. Forest degradation has escalated as they do not use indigenous forest management knowledge. In the 1990s the Forest Department introduced the Non-resident Cultivation (NRC) for the establishment of plantation forests. Through the approval of the respective District Development Committees, cultivators were involved in plantation development under certain terms and conditions that were enforced by the respective Forester, District Forest Officer and Provincial Forest Officer. The Non-resident cultivation is a modification of the Shamba system that attempts to reduce the risk of cultivators claiming squatter rights on forest land. The system however, fails to take into account the need to protect crops from wild animals and thieves that invade the plots at night. The Ogiek people did not practice any Shamba system or non-resident cultivation. Those who still reside in the forest do very little cultivation, but not within arrangements sanctioned and therefore controlled by the Forest department. Moreover, the Ogieks of Mau do not dwell in plantation forests where the Shamba system or non resident cultivation is done. Their homes are in natural forest reserves. Human Settlement Carving out of forests for human settlement is on the increase as the government is very keen to settle the forest dwelling communities along the forest boundaries or within the cleared forest plantations. However the Ogieks are strongly opposed to this and are keen on working out modalities of managing the forests together with the government. There has been continuous eviction of the community from the forests for resettlement outside the natural forests. Some community members are still back into the forests and do not want to change their current lifestyle. This resettlement is politically motivated as the community is aware of some people who have registered as part of the community in order to obtain land. So far the outsiders have been allocated land but some of the Ogieks are still concentrated in Forest Reserves. Forest excisions The process of forest protection was introduced under the ‘East Africa Forest Regulations, 1902’ by the first Conservator of Forests. These regulations allowed for the gazettement and degazettement of forests, and control of forest exploitation through a system of licences and fines. The Government through the Minister for Natural Resources has the express authority to degazette the forest through a legal process of excision. This excisions are done with the intent of converting the area to other alternative land uses like settlement, private agriculture that do not foster tree cover. The forests are degazetted then surveyed and demarcated for the proposed use. There are several loopholes in the excision process. These include: The excisions are made without consultation with the stakeholders. Procedures of collecting public views and sharpening their perspectives on causes-effects linkages as it may affect those aggrieved by the excision are never put in place and neither are provisions for compensation clear. A notice is placed in the Kenya Gazette and whoever wants to contest it is given 28 days to do so. The Minister is however under no obligation to consider the views in the final decision. The readership of the Kenya Gazette is very limited and not many people get to know about the notices. The Minister has the powers to put in a notification and he can be influenced by political and economic pressure but not necessarily for the common interest of the public. Excisions usually take place after the forests have already been illegally occupied. There is no environmental and socio-economic impact assessment done for the proposed changes in land-use leading to unsustainable land management. Fires In order to clear land for cultivation or grazing, those intending to settle into the forest set the vegetation on fire. The fires spread extensively and cause a lot of damage to the forest biodiversity. Charcoal burners also destroy the forest as they use traditional kilns which are not energy efficient, this activity is done illegally and therefore no one controls or tends the fires which in most cases destroy the areas surrounding the charcoal burning sites. The actors responsible for the mentioned direct causes include the Forest Department, saw millers, politicians, and influential persons. Since Mau Forest is a gazetted forest, and therefore government property, no individual or community has the legal right over this resource. This gives leeway for illegal exploitation as the people are alienated from their resources. The Ogieks are not able to intervene when they also see outsiders destroying what they have lived to conserve and this is very disheartening. There are a lot of powers vested onto the Minister of Natural Resources especially regarding excision. In a situation whereby policy decisions are entrusted in the hands of a few individuals they are not made to serve the public interest. 1.4 Community interventions to counteract the deforestation process and problems encountered Protection of the rivers and streams in the area The community members have a system of managing the forests through their lineage system. Each clan is in charge of a forest block, zoned along natural boundaries like rivers, hills and valleys. It is the responsibility of the elders to ensure that the resources are used in the right way. This knowledge is passed on to the young generation by this elders. The community members protect the streams by ensuring no cultivation is done within 50 metres on both sides of the rivers. However this can no longer be ensured as the Government is always removing them from the forests and resettling them elsewhere. There is a lot of infiltration into the forest by outsiders who are not keen in managing the river banks and just clear the trees for short term gain. Community involvement in forest conservation The Ogieks recognise the fact that they have lived in the forests and depended on them through out their lives. They have used their indigenous knowledge to sustainably utilise the forest products (honey, wild fruits and nuts, game meat) and ensure the resources are protected. They noted with concern that the destruction of the forest is done by outsiders who burn charcoal and fell trees for timber. They realise that those destroying the forests will have an impact on them even when they conserve the areas where they are allocated. They propose that their traditional forest management knowledge be incorporated into conventional forest management. They also request to be involved in the decision making process regarding forest management. They are limited by the present tenure system as they live in the forest but do not have ownership rights over it from the time it was gazetted. With the current resettlement programme they are keen to obtain ownership of the land then make tangible future conservation plans. They prefer to own the allocated land communally and manage it this way. They are keen on adoption of agroforestry practices and would still like to continue hunting, collecting honey and wild fruits from the natural forests. They are however, restricted from these activities and are opposed to any forced change in their way of life. Legal mechanisms In order to counter political interference and allocation to forest land to individuals the Ogieks have filed a case in court which is on-going and will take time considering the legal procedures to be followed. The defendants include the Attorney General, the Area District Officer, District Forest Officer, and the Office of the President (which gave the directive that parts of the forests be subdivided for settlement). 2. Description of the underlying causes and the actors responsible for them 2.1 Underlying causes of deforestation and forest degradation Weak policy formulation and enforcement The land policies in totality often tend to be agrarian favouring large-scale farmers. They are not consistent as they application varies with different regions or sectors depending on the land tenure systems. This leads to confusion, misuse, non-use, and indiscriminate destruction of the resources. The government has acknowledged the need for a serious review of the land tenure system but has not implemented this. The Policy Framework Paper on Economic Reforms for 1996-1998 confirmed the intention of the government to establish a Land Use Commission to address land tenure and land policy issues with a view to improving sustainable agricultural productivity and food security situation as well as ensuring biodiversity considerations are taken in land-use decisions. To date, no commission has been set up this being the last year of the reform period. Policy mandates on conservation, governance, accessibility and sustainable use of forestry resources does not offer a broader range of public participation and approval in its decision making process. The current policy and legal framework does not promote sustainable forest management. It was inherited from the colonial era and more concerned with control and distribution rather than management. It is based on Session Paper No. 1 of 1968 which was a restatement with minimal changes of White Paper No. 1 of 1957 that was the basis of colonial forest policy. It does not give room for collaborative forest management and neither does it take into consideration the lifestyle of the forest dwellers. It further fails to clarify issues of forest resource ownership, accessibility, mechanism for public approval and redress in its judicial and administrative procedures. The policy is enacted through the Forest Act that vests a lot of power in the hands of the Minister for Natural Resources. An amended forest policy based on the Kenya Forestry Master Plan that recommends the development of several forms of partnerships which will incorporate and involve all forestry stakeholders in forest management is yet to be tabled in parliament for debate. The Ogieks lived in the forest before it was gazetted and it is their ancestral land. They had customary land rights over the forests. The forest dwellers find themselves in a very precarious position as they do not have security of tenure under the present system and are often victims of inappropriate decisions made for them. For instance they have been evicted from the forest many times and are no longer provided with social amenities in the forest. They are also prohibited from grazing, hunting and collecting honey in the forest. In terms of enforcement, the penalties that are laid down on infringement of forest land is very low compared to the potential gains from illegal activities. Those in-charge enforcing the legislation are lax as they not well motivated to do so and often work together with those destroying the forests. Political factors As a result of political rivalry, forests were given to supporters of particular politicians as a bribe or repayment for political patronage. Most of the forest was subdivided into five hectares plot for allocation just before the last elections. This was done to woo the voters from particular communities. There were a lot of outsiders posing as Ogieks in order to obtain land. There has also been a move to try and assimilate the Ogieks into bigger tribes. Those allocated the land are after quick gain and not interested in conservation. In any case this sub-division interferes with forest biodiversity as the plots are put under different land use systems. The decision regarding forests lies in the hands of the Minister of Natural Resources who is influenced by other top politicians. Natural resources are destroyed to enrich the political royalty. Therefore it is the politically correct who benefit from forest excisions. The decision to subdivide Mau forest was made in an ad-hoc manner without consultation with those depending on them or the environmentalists. Even the Forest department was not consulted on this issue yet they are the custodian of this forest. The forest dwellers adversely affected by such decisions. Macro economic policies Cash crop production for export: Cash crop farming is on the increase on the cleared portions of forest. These cash crops are grown for export to the industrialised countries and compete in the world market to earn the country the much needed foreign exchange. The crops grown include tea and pyrethrum. The Ogieks claimed that pyrethrum and pesticides applied on the farms kill bees and have rendered bee keeping unviable. Bee keeping is affected by the growing of pyrethrum and the use of pesticides on the farm, it is therefore not a suitable alternative to harvesting of honey in the forest. Nyayo Tea Zones Development Corporation was assigned forest land in order to grow tea to provide a buffer between the agricultural land and forests designated for protection as well as an alternative source of income and employment. This was established by Presidential order in 1986 and Act of Parliament in 1988. The approximate boundary planting width that the zones were to occupy were not formally established but a general width of 100m into the forest was nominally accepted. Little consideration was given to the suitability of these areas, they are moderate to poor for tea growing in some parts. Further, the areas have been affected by poor management and poor access leading to further degradation of the forest. This tea zones have been the largest alternative use of forest land in Mau, out of a total of 2152 ha cleared in Mau Forest, only 542 ha were planted with tea leading to serious forest loss and degradation. The market promotes growing of these commodities for global trading thus impact on the activities at the local level. Liberalisation The liberalisation process has put a lot of emphasis on the privatisation of public land and forests resulting in the non recognition of customary resource tenure. The Ogieks have been denied their ancestral rights to the land they occupy. The government is in the process of issuing title deeds for forests and this process can be abused in terms of area the area quoted in the title deed being much less than the actual forest area. Structural Adjustment Programmes: As a result of the restructuring process going on the Government has had to trim the public sector and reduce the budget allocated to its various departments. The Forest department has not been spared from this. Most of the forest guards have been retrenched making it very difficult for the forests to be managed well. This encourages illegal use of forests. Population pressure Kenya’s population is concentrated on the arable land which is about 20% of the country’s area. This puts a lot of strain on the forests which are seen as ‘free land for potential use’. In Mau Forest, those coming from outside (the forest neighbours) would like to reap maximum benefits from it. They come to get land for cultivation (some practise commercial tractor farming) and grazing. They supplement their income by felling indigenous trees for charcoal. The Ogieks are keen on utilising the forest sustainably as they depend on it for their livelihood. This brings about a lot of conflict between these two groups resulting to further destruction.

#### Second, bees are key to biodiversity and agriculture – agriculture is the key internal link

Shah 11 [(Anup, founder of Global Issues) “Why Is Biodiversity Important? Who Cares?” Global Issues April 6] AT

Bees provide enormous benefits for humankind as another example. As reported by CNN (May 5, 2000), “One third of all our food—fruits and vegetables—would not exist without pollinators visiting flowers. But honeybees, the primary species that fertilizes food-producing plants, have suffered dramatic declines in recent years, mostly from afflictions introduced by humans.” As German bee expert Professor Joergen Tautz from Wurzburg University adds: Bees are vital to bio diversity. There are 130,000 plants for example for which bees are essential to pollination, from melons to pumpkins, raspberries and all kind of fruit trees — as well as animal fodder — like clover. Bees are more important than poultry in terms of human nutrition. — Joergen Tautz interviewed by Michael Leidig, Honey bees in US facing extinction, The Telegraph, March 14, 2007 Researchers are finding reasons for the massive decline hard to pinpoint, but suspect a combination of various diseases, environmental pollution, environmental degradation (leading to less diversity for bees to feed from, for example) and farming practices (such as pesticides, large monoculture cropping, etc). The link and dependency between plants, bees, and human agriculture is so crucial, the two scientists writing up years of research into the problem summarized with this warning: Humankind needs to act quickly to ensure that the ancient pact between flowers and pollinators stays intact, to safeguard our food supply and to protect our environment for generations to come. These efforts will ensure that bees continue to provide pollination and that our diets remain rich in the fruits and vegetables we now take for granted. — Diana Cox-Foster and Dennis van Engelsdorp, Solving the Mystery of the Vanishing Bees, Scientific American, April 2009

#### Third, *a shift to organic ag solves water sustainability – this also causes water shortages*

*Pretty 6—Professor of Environment and Society at University of Essex [Jules Pretty, Agroecological Approaches to Agricultural Development, Background Paper for the World Development Report 2008, November 2006]*

*Widespread appreciation of the `global water crisis’ recognizes that scarcity of clean water is affecting food production and conservation of ecosystems. By 2025 it is predicted that most developing countries will face either physical or economic water scarcity. Water diverted from rivers increased six fold between 1900 and 1995, far outpacing population growth. Increasing demand for fresh water now threatens the integrity of many aquatic ecosystems, and their associated environmental services. As agriculture accounts for 70% of current water withdrawals from rivers, so improving the productivity of water use in agriculture is a growing challenge. The potential for increasing food production while maintaining water-related ecosystem services rests on capacity to increase water productivity (WP), i.e. by realizing more kg of food per unit of water. Sustainable agricultural practices may do this by: i) removing limitations on productivity by enhancing soil fertility; ii) reducing soil evaporation through conservation tillage; iii) using more water efficient varieties; iv) reducing water losses to unrecoverable sinks; v) boosting productivity by supplemental irrigation in rainfed systems; and vi) inducing microclimatic changes to reduce crop water requirements (23). We calculated changes in WP for field crops in 144 projects from the data set (Table 5) based on reported crop yields and average potential evapotranspiration (ETp), for each project location during the relevant growing season. Actual evapotranspiration (ETa) was assumed to equal 80% of ETp, and ETa to remain a constant at different levels of productivity. Pg. 19*

#### Water shortage is specifically true for Kenya – Kenyan agriculture causes water shortage soon

CIEN 4 [(Chemical Information Exchange Network (CIEN) is a network of people involved in the management of chemicals) “Environment Management” MINISTRY OF ENVIRONMENT AND MINERAL RESOURCES. No date, 04 is last date cited] AT

The current environmental issues of concern in Kenya currently: 1. Water pollution from urban and industrial water-this affects major urban areas like Nairobi, Kisumu, and Mombasa etc. Decline of flamingoes in L. Nakuru has been attributed to this cause. 2. Degradation of water quality from increased use of pesticides and fertilizers-this affects the agricultural areas and upsets ecosystems of local water systems e.g. L.Naivasha 3. Water hyacinth infestation in L. Victoria. 4. Solid waste management and disposal-Is a major challenge for the major urban areas. 5. Deforestation, desertification and soil erosion: these are intertwined and is blamed for climatic changes and depletion of water catchment areas Water resources Water resources are under pressure from agricultural chemicals and urban and industrial wastes, as well as from use for hydroelectric power. Kenya expects a shortage of water to pose a problem in the coming years. Water-quality problems in lakes, including water hyacinth infestation in Lake Victoria, have contributed to a substantial decline in fishing output and endangered fish species. Water pollution from urban and industrial wastes poses another environmental problem. Kenya has 20.2 cubic kilometers of renewable water resources with 76% used in farming activity and 4% used for industrial purposes. Only about 42% of the residents in rural areas and 88% of city dwellers have pure drinking water.

#### Destruction of the water cycle causes extinction

GNG 12 (Global Nomad Group, an international NGO whose mission is to foster dialogue and understanding among the world’s youth, http://gng.org/wp-content/uploads/2012/12/Module-2-Flows-and-Cycles1.pdf?f22064)JFS

The water cycle renews fresh water, one of the most important resources for life on earth. Water is needed for food production, economic development and human survival. Climate change is predicted to have a range of impacts on water resources. Variation in temperature and rainfall may affect water availability, increase the frequency and severity of floods and droughts, and disrupt ecosystems that maintain water quality.5 By 2023, 1800 million people will be living in countries or regions with absolute water scarcity, and two-thirds of the world pollution could be under stress conditions.6 Water shortages are an important concern because they can increase conflict and public health problems, reduce food production and endanger the environment. In China, underwater aquifers that take millennia to fill have been depleted by the rapid growth of megacities with surging populations.7 Like China, many countries and regions are now satisfying the demand for water by withdrawing groundwater faster than it is replenished, thereby potentially depleting their supply for future generations. This type of mismanagement can lead to major disruptions in the natural water cycle. Creating a sustainable future will depend on learning how to effectively manage water resources. We must understand the capacities and limitations of the natural water cycle, the consequences of overdrawing water resources and how to conserve water resources that are still available.

#### *Fourth, industrial farming causes dead zones, which also cause water shortages*

*Wagner 9 [(Cynthia, Editor of The Futurist magazine, explores the technological, scientific, environmental, social, and policy trends shaping our collective future) “Oceans’ Dead Zones on the Rise” World Future Society, Nov-Dec 2009] AT*

*A predicted global increase in food consumption is likely to create an environmental crisis where it’s least expected. Studies link a rise in industrial food production to an increase in the already large number of so-called “dead zones” in coastal waters. Dead zones are so named because they lack sufficient oxygen to support fish, crustaceans, and other forms of marine life. The World Resources Institute (WRI) recently labeled them a “rapidly growing environmental crisis.” More than 400 have been identified worldwide, and researchers have spotted one in the Gulf of Mexico near the mouth of the Mississippi River that’s roughly the size of a small country — 7,500 square miles and growing. A major contributor to the problem is industrial agriculture, according to WRI. Too much animal manure and crop fertilizer is entering into and contaminating freshwater and coastal ecosystems. The nitrogen and phosphorous they contain overfertilize the algae and phytoplankton that grow on or near the surface of the water, causing the plants to grow at an unnaturally high rate. The unusually large amounts of algae inevitably die and sink to the bottom of the gulf. As the plant matter decomposes, it exhausts much of the oxygen from the surrounding water. This process is known as eutrophication. Since much of the manure from factory farms runs off into freshwater streams before being transported out to sea, the problem it isn’t limited to coastal waters. Eutrophication may be the primary reason for freshwater problems in the United States, WRI claims. And eutrophication doesn’t just impact the environment — it affects human health and economic systems as well. Global consumption of meat is expected to increase by more than 50% within the next 25 years. WRI reports that a surge in livestock production in particular would have serious repercussions for developing countries that lack strong, enforceable environmental regulations.*

#### Ocean degradation causes extinction

Craig 3 [Robin Craig, Indiana University, Robin Kundis, Winter, 34 McGeorge L. Rev. 155, p. 264-266]

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far rarely been raised in political debates. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. More generally, "ocean ecosystems play a major role in the global geochemical cycling of all the elements that represent the basic building blocks of living organisms, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." In a very real and direct sense, therefore, human degradation of marine ecosystems impairs the planet's ability to support life. Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity, "indicating that **more diverse ecosystems are more stable**." Coral reef ecosystems are particularly dependent on their biodiversity. Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is higher on coral reefs than in any other marine environment. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire lawmakers and policymakers to admit that most of the time we really do not know what we are doing to the sea and hence should be preserving marine wilderness whenever we can - especially when the United States has within its territory relatively pristine marine ecosystems that may be unique in the world. We may not know much about the sea, but we do know this much: if we kill the ocean we kill ourselves, and we will take most of the biosphere with us**.** The Black Sea is almost dead, its once-complex and productive ecosystem almost entirely replaced by a monoculture of comb jellies, "starving out fish and dolphins, emptying fishermen's nets, and converting the web of life into brainless, wraith-like blobs of jelly." More importantly, the Black Sea is not necessarily unique. The Black Sea is a microcosm of what is happening to the ocean systems at large. The stresses piled up: overfishing, oil spills, industrial discharges, nutrient pollution, wetlands destruction, the introduction of an alien species. The sea weakened, slowly at first, then collapsed with shocking suddenness. The lessons of this tragedy should not be lost to the rest of us, because much of what happened here is being repeated all over the world. The ecological stresses imposed on the Black Sea were not unique to communism. Nor, sadly, was the failure of governments to respond to the emerging crisis. Oxygen-starved "dead zones" appear with increasing frequency off the coasts of major cities and major rivers, forcing marine animals to flee and killing all that cannot. Ethics as well as enlightened self-interest thus suggest that the United States should protect fully-functioning marine ecosystems wherever possible - even if a few fishers go out of business as a result.

#### East African aquatic ecosystems are also a biodiversity hotspot – agriculture is the key internal link

UNEP 2000 [(United Nations Environment Programme) “The environment of Eastern Africa”] AT

The Eastern African region covers four coastal countries along the East African coast (Kenya, Mozambique, Tanzania and Somalia), one large island state (Madagascar), three smaller archipelagic states (Comores, Mauritius and Seychelles), and the territories of France in the southwest Indian Ocean (La Réunion). The environment here defies generalization, and encompasses several biogeographic provinces. Ecotypes include coastal dry forestss, coastal dunes, coastal floodplains, fresh and brackish water marshes,mangvoe forests, coral reefs, reef-back lagoons, sandy beaches and seabird rookeries (sea cliffs and nearshore islands). These areas function as essential habitat for local species including fish and migratory birds, as shoreline stabilizers, and as buffers again coastal erosion. The coast of Eastern Africa is bathed by the great current systems of the Indian Ocean, which vary greatly with the seasonal monsoons. The Indian Ocean has particularly narrow continental shelves along this coast, and thus lower biological productivity than many coastal regions. The coast is rich in varieties and numbers of marine life forms, however. Extensive and highly diverse coral reefs fringe its narrow shelves shores. Species-rich mangroves with their commercially important oysters, crabs and mullet abound near river estuaries and along the coasts, particularly those of Mozambique, Tanzania, Kenya and southern Somalia. The region's people are dependent to a significant extent on coastal resources. Fisheries rely on the trawlable inter-reef areas and the species-rich mangroves with their commercially important oysters, crabs and mullet. Coastal ecosystems are important economically for tourism and recreation. Threats In 1981 a UNEP fact-finding mission to East Africa identified large-scale erosion, oil pollution, damaged coral reefs, ruined mangrove swamps, pollution from fertilizers and threats to precious marine animals as the major environmental problems in the region. The list of threats to the environment has changed little since then. A workshop in 1997 listed domestic sewage, solid domestic waste, habitat degradation, agrochemical pollution and industrial waste pollution. The region remains characterized by vulnerable economies, large populations with a high rate of population growth, and areas subject to environmental stress. Pollution The important and heavily fished reef zone close to shore is particularly vulnerable to pollution and silting. Oil is a major pollution threat to coastal ecosystems, owing to the heavy use of the tanker route along the East African coast. On any given day there are hundreds of tankers in the Region, many of them Very Large Crude Carriers (VLCCs). Slicks are brought in from spills in the open ocean by coastal currents, while operational discharges from ships and refineries add to the load. In recent decades, the growth of industry has brought an increasing volume of effluents to coastal waters. The use of agricultural chemicals has continued to grow, and sewage treatment continues to be inadequate in many parts of the region. Some species of marine animals are already endangered as a result of human activities, particularly the dugong or manatee, which is often caught in fishing nets and drowned. Marine turtles continue to decrease in numbers as their eggs are poached and the adults are killed for their meat and decorative shells. Eastern Africa is also undergoing an extraordinary rate of urbanization. As the cities have become overcrowded, water supplies have proven insufficient, and systems for drainage, sewerage and refuse disposal inadequate. Domestic sewage is discharged directly into rivers and in some cases the sea. Although industrialization remains slow relative to other parts of the world, it takes place without proper environmental impact assessments legislative controls, leading to further pressure on the environment. Rivers, creeks and the sea have become dumping sites for industrial wastes. Industries of major environmental concern in the region include textiles, tanneries, paper and pulp mills, breweries, chemical factories, cement factories, sugar factories, fertilizer factories, and oil refineries. In some countries, slaughter houses near the sea are a serious source of marine pollution. Desertification Long drawn out droughts, over-grazing and poor agricultural practices, deforestation and reclamation of wetlands for agriculture are all combining to bring about desertification in the coastal areas of East Africa. The continued high population growth rate is placing pressure on land beyond its carrying capacity, and driving out the traditional nomadic practices which allowed for environmental recovery. Livestock development is seldom accompanied by proper pasture management, leading to desert conditions in areas of concentration. When these destructive pressures occur in semi-arid areas with shallow soils, desertification and desert encroachment can becomes irreversible. The semi-arid parts of Eastern Africa are particularly vulnerable. Coastal degradation and erosion Human encroachment and activities such as animal husbandry and agriculture are rapidly degrading the coastal environment of Eastern Africa, resulting in deforestation, destruction of mangroves and disappearance of other vegetation; a decline in soil fertility, and the death of wildlife. Marine resources are directly threatened by these activities. Mangroves were once common in sheltered bays and estuaries, providing shelter to many important fish species and prawns. They are now threatened by intensive cropping to provide firewood, poles, tannin, medicinal products, paper pulp and timber, and to open up new space for aquaculture and salt production. Mangrove swamps are also threatened by fluctuations in the amount of fresh water and sediment reaching them caused by upstream hydraulic works, and indirectly by destruction of protective reefs.poles, firewood and by large-scale clearing for salt production. Coral reefs have been damaged by excessive siltation resulting from poor agricultural practices, deforestation along riverbanks, and the dredging and and dumping associated with harbour development. Many were damaged by fishing with dynamite and poison, especially before these methods were outlawed in part of the region. Tourists collect coral as souvenirs. More recently the bleaching of corals has become a severe problem. The shoreline in most of the region is receding as a result of coastal erosion: the shoreline retreat over parts of Tanzania has been estimated at between three and five metres per day. Barrier islands are particularly vulnerable to rising sea levels. Climate change A task team report on the implications of climate change for the Eastern African region (see UNEP: Potential impacts of expected climate change on coastal and near-shore environment. UNEP Regional Seas Reports and Studies No.140 (UNEP, 1992.) concluded that the region's low-lying coastal areas and marine ecosystems, water resources, terrestrial ecosystems and human settlements and coastal infrastructure are at risk as a consequence of climate change impacts. The economies of the region are dominated by agriculture. Fishing is an important source of food and contributes to the economy of the majority of the countries. Tourism is an important activity. The effects of climate change will be felt everywhere, perhaps most obviously in altered patterns of rainfall, coastal weathering, atmospheric pressure and evaporation. The spatial and temporal distribution of storms and cyclones will change their paths and frequency, and could well increase in intensity: Some scientists believe the terrible floods of early 2000 in Mozambique are but a taste of worse to come. Besides the direct toll on human lives, there will be impacts on coastal habitats such as coral reefs, lagoons, and mangroves. The reefs will be vulnerable to wave action and sea-level rise as well as sedimentation. Their destruction will lead to a decline in natural coastal defences and further encourage coastal erosion. The quality and quantity of water available from rainfall, rivers and ground water will be affected by changes in the distribution and amount of rainfall, evapo-transpiration, surface runoff, river discharge, recharge, and aquifer volumes. Drier and hotter conditions would place an inordinate pressure on water resources. Ecosystem effects could include latitudinal and altitudinal shifts in plant and animal species as well as, loss of biodiversity due to water scarcity and arid soil conditions. While agriculture might benefit somewhat from a global increase in CO2, moisture deficits would lower crop yields and require additional irrigation. Sea-level rise would increase the intrusion of saline water up river mouths and also decrease the area available for cultivation on low-lying coastal areas and river estuaries. Fisheries would be affected by changes to the breeding and migratory habits of most fish, hence, year to year variability of stocks could increase leading to a planning and management problems. Socio-economic activities, and infrastructure such as port facilities, waste disposal, roads, are already under stress. Climate change would create additional stress, hence reducing economic performance and growth. The human factor A critical problem in the region is the rapid rate of human population growth in some countries. Infrastructure has a hard time keeping up, with resulting strain on educational facilities as well as resources. Much of the population resides in the coastal areas, employed by the light industry located along the coast and others in the tourist industry. Most of the region's economies rely on agriculture and tourism which together contribute close to 50% of the gross domestic product. Tourism specifically is a main earner of foreign exchange in the coastal parts of most of the countries in the region. The population is unevenly distributed over the region. Northern Mozambique and Merca northwards of Somalia are almost uninhabited due to extreme climate conditions. Both mainland and island populations are concentrated on the coasts, where population growth is higher than average for the region as a whole, largely owing to migration, urbanization and favourable employment opportunities. The majority of these populations are employed by the light industry located along the coast and others in the tourist industry. Most of the economies rely on agriculture and tourism which together contribute close to 50% of the gross domestic product. Tourism specifically is a main earner of foreign exchange in the coastal parts of most of the countries in the region. The extremely rapid rate of population growth in some of the countries in the region is a critical factor, and the resulting pressure on social amenities, notably in the coastal cities, has become very high. The infrastructure is unable to keep pace with the population growth rate; educational facilities are no longer adequate and the resource base to support the required expansion programme meagre. There is great disparity in per capita income in the countries of the region for a variety of political and environmental reasons.

#### Biodiversity loss in specific hotspots causes extinction and disease

Howard 11 [(lead of Ecosystem Service and Poverty Alleviation Project, Wageningen Univ. Department of Social Sciences Faculty) “Tipping Points and Biodiversity Change: Consequences for Human Wellbeing and Challenges for Science and Policy” Draft Prepared for the Kavli Seminar“Addressing Global Tipping Points”13-15 March 2011] AT

In the 20 th century, we became aware that the fate of biodiversity and the fate of humans are intimately interconnected. Before this, only some religions (and a few philosophers) predicted the end of life onEarth or human extinction through different versions of Armageddon, which was generally caused by thedivine consequences of wayward human behaviour. Darwin’s theory of evolution provided the means to un-derstand continual species extinctions, and scientists began to unearth the evidence of previous mass extinc-tions. However, the idea that extinction might extend to the human species was not taken up until the 20 th century, when it was argued that all species invariably become extinct (Raup 1991). Scientists came to un-derstand that the human species could disappear through catastrophic natural events, much as the dinosaursdisappeared, as a result of bolide impacts or large-scale volcanism. A secular concept of self-annihilationemerged less than 50 years ago with the spectre of global nuclear holocaust, which would also render muchother life on Earth unviable (see e.g. Robock et al. 2007), and where the life that remained would be distinct-ly antithetical to humans. Many now argue that there are other catastrophic threats to the human species,some of which threaten life on Earth more generally (Rees 2003, Posner 2004, Bostrom & Cirkovic 2008,Al-Rodhan 2009). We can only speculate whether the sixth mass extinction of species that appears to be un-derway has implications for the continued evolution of the human species, but we do know that it is the syn-ergies and feedbacks between global environmental change and biodiversity change, combined with mala-daptive human responses to that change (e.g. global nuclear conflict; unintended effects of technological re-sponses), that leads to the most catastrophic scenarios.Critical questions that arise when considering biodiversity change, the threats that it poses to humanwellbeing, and the challenges that it presents for mitigation and human adaptation, are whether there are crit-ical thresholds or ‘tipping points’ related to biodiversity change, and whether such tipping points can lead or contribute, directly or indirectly to global tipping points or whether they ‘only’ have implications at local or regional scales. If there are such tipping points, what types of implications do they have for human wellbe-ing? For whom, where, and when? Further, can such tipping points be avoided, and are we prepared to dealwith (adapt to) them if they cannot?With biodiversity change, there are a number of vulnerabilities to which the majority of the globe’s human population are exposed not only because they are impacted by this change at local level, but also because even local changes can have global repercussions due of global interdependencies. One is the rapidemergence and transmission of new infectious diseases and pests that both threaten plants and animals (and thus the humans that depend upon them), as well as humans directly (e.g. Chivian & Bernstein 2008, Pong-siri et al. 2009, Keesing et al. 2010, Sharma 2010). A second is invasive species, where species disperse be-yond their ‘normal’ range, invade many different regions on different continents, affecting the invaded eco-systems in highly unpredictable ways (e.g. GISP n.d., Walther et al. 2009, Perrings et al. 2010). Both maycontribute strongly to a third such vulnerability, which is addressed here, presented by tipping points that may emerge at regional scale, such as the loss of the Amazon rainforest or the collapse of coral reefs, that can have extra-regional or even global repercussions not only due to the loss of species and ecosystems, but as well due to the loss of some of the ecosystem services that these provide e.g. as CO 2 sinks, which creates synergies with phenomena such as climate change and ocean acidification. Finally, the fourth vulnerability is posed by human maladaptation to any of these dynamics, where maladaptation can exacerbate biodiversity change and can lead to other negative effects for human welfare and ecosystems. Conflict over dwindling biological resources and ecosystem services is likely to become pervasive, and conflict over the understand-ing of the causes and effects of such change are likely to be just as serious. The global security implications of climate change are of great concern and are being assessed (e.g. GACGC 2007) but, to our knowledge, no such assessment exists for biodiversity change. Many of the global, regional, and national institutions that inthe past have evolved to manage human-biodiversity relations have so far been shown to be relatively inef-fective in stemming biodiversity loss (see e.g. CBD 2010) and thus they are likely to be even more ineffec-tive in dealing with surprises or with the large-scale repercussions of the loss of benefits, e.g. of food, andnew institutions will have to emerge if such threats are not to translate into local, regional, and even global,catastrophe. I argue that to successfully adapt to tipping points requires major changes in values, priorities, andinstitutions, particularly economic institutions: some of this change may be forthcoming but much is unlikelyto change quickly or profoundly enough to avoid such tipping points. A first step is to recognise the implica-tions of biodiversity change and potential tipping points for human wellbeing, which is currently impeded bycultural, cognitive and political barriers. A second is to prepare for such change, and a third is to prepare po-tential responses. II. Biodiversity Change and Tipping PointsA. Types, magnitudes and drivers of biodiversity change Aside from numerous potential sources of global catastrophe that could have such implications for life onEarth, we also find ourselves in a period when rates of species extinctions are estimated at 50-500 times background, which is the highest rate in the past 65 million years. The effects of ongoing rapid decline of biomes and homogenisation of biotas have been summarised as:changes in species geographic ranges, genetic risks of extinction, genetic assimilation, naturalselection, mutation rates, the shortening of food chains, the increase in nutrient-enriched nich-es permitting the ascendancy of microbes, and the differential survival of ecological general-ists. Rates of evolutionary processes will change in different groups, and speciation in thelarger vertebrates is essentially over…Whether the biota will continue to provide the dependa- ble ecological services humans take for granted is less clear…Our inability to make clearer predictions about the future of evolution has serious consequences for both biodiversity andhumanity (Woodruff 2001: 5471).The consequences for biodiversity and humanity depend in part on the timescale in reference. Some scien-tists argue that the Earth’s sixth extinction has already arrived, where an estimated loss of over 75% of spe-cies can be expected, possibly within 250 to 500 years (Barnosky et al. 2011), although others highlight thefact that projections of species extinction rates are controversial (Pereira et al. 2010). A mass extinction hardly bodes well for humans given the changes in the biosphere, in biomes and ecosystems, the associated pest and disease outbreaks, etc. that are associated with the different drivers of biodiversity change and the possi- ble critical thresholds or tipping points discussed below and in other papers presented here. Thus, the impli-cations of what is laid out below are magnified many fold and their effects become increasingly synergisticover time – 500 years is a very short period when we consider that Homininae appeared 8 million years ago, Homo sapiens 500,000 years ago, and modern humans 200,000 years ago – effectively, it constitutes only.25% of modern human history. Were humans to have a council of elders to deliberate the impact of our ac-tivities on future generations, it would certainly be extraordinarily alarmed and calling for radical transfor-mations as, indeed, are many scientists today.What is extraordinary about this possible 6 th extinction of species is that, since it is human-induced,it is not inevitable and depends, for example, on rates of climate and land-use change (Pereira et al. 2010).For the first time in the Earth’s history, a species is actually in a position to change the course of evolutionwrit large (Western 2001). This is reflected in the range of projected changes in biodiversity, which is very broad both because ‘there are major opportunities to intervene through better policies, but also because of large uncertainties in projections’ (Pereira et al. 2010: 1496). The possibilities and constraints to doing so arediscussed below and in other papers. Many scientists consider that the probability that we will change thecourse that evolution is currently on is low or very low without radical and immediate transformations invalues, knowledge, behaviour, markets, and governance. 3The causes of species extinctions and related change in biodiversity and ecosystem services can becharacterised as ‘synergistic stressors’ – climatic change coupled with ‘abnormally high ecological stressors’and ‘unusual interactions’ (e.g. between human-induced climate change, habitat fragmentation, pollution,over-harvesting, invasive species, pathogens and, some would add, the ‘expanding human biomass’ (Bar-nosky et al. 2011) although one could just as easilyadd ‘the expanding livestock biomass’ or ‘expanding biofuels production’)(Steinfeld et al. 2010, Wise et al.2009). Beyond this, humans have had a massive im- pact on the productivity, composition, and diversity of terrestrial ecosystems by changing the rates of supplyof major nutrients (nitrogen, phosphorus, and atmos- pheric CO 2 ), changing regional fire frequencies, [and]relaxing biogeographic barriers to species dispersal’(Tilman & Lehman 2001: 5433).Many human-dominated ecosystems are char-acterised by high natural resource extraction, shortfood chains, food web simplification, habitat and land-scape homogeneity, heavy use of petrochemicals andfossil fuels, convergent soil characteristics, modifiedhydrological cycles, reduced biotic and physical dis-turbance regimes, and global mobility of people, goodsand services (Western 2001) which give rise to theeffects in Box 1. In sum, humans are currently ‘appro- priating more than a third of all terrestrial primary production and, in so doing, have simplified or de-stroyed large portions of some types of ecosys-tems…many human environmental impacts are pro- jected to be two to three times stronger within 50years’ (Tilman & Lehman 2001: 5433). Notwithstand-ing their global significance, and not all human-dominated ecosystems are the same, not all humansare having the same impacts on biodiversity and eco-systems, which will also be taken up again below.According to the Millennium Ecosystem As-sessment (MEA) (Mace et al. 2005), at present habitatchange and fragmentation are the most important drivers of species extinctions, whereas invasive species andover-exploitation are the next most common, and disease, climate change, and pollution follow these in im- portance. Until recently, scientists generally agreed that species extinctions are principally due to habitat change and fragmentation, where it is human-induced land use changes such as agricultural expansion and especially tropical deforestation that have been the most important drivers, particularly since species richness is highest in tropical forests. As a result, most conservation activity has focused on reducing habitat loss andits impacts (Lewis 2006). Nevertheless, the major drivers of change in biodiversity vary per ecosystem type(Mace et al. 2005). For example, in tropical forests, habitat change has had a very high impact on biodiversi-ty over the past 100 years, followed by over-exploitation, whereas climate change, invasive species, and pol-lution have played minor roles. This is not the case in boreal forests, where nitrogen and phosphorus pollu-tion have been the major drivers.Since about the 1990s, however, there has been growing evidence that climate change is both interact-ing with these drivers and increasingly as a driver of biodiversity change in and of itself, to the point wheremost experts now agree that climate change will surpass habitat loss and fragmentation as the principle driv-er of species extinctions (Hannah et al. 2005, Thomas 2004, van Vuuren 2006). Climate change is not onlyincreasingly driving species extinctions: it also affects species composition in any given ecosystem throughchanges in range (distribution) of species, changes in timing of reproductions, and changes in the length of the growing season for plants (CBD 2007 and below). Today, scientists consider that it is the synergy be-tween habitat change and fragmentation and climate change that is the most threatening to biodiversity, giv-en that habitat loss and fragmentation can prohibit species from migrating and colonising new areas in re-sponse to climate change (Lovejoy & Hannah 2005).

#### **Disease causes extinction**

Steinbruner 98 – John D, a senior fellow at the Brookings Institution where he holds the Sydney Stein, Jr. chair in international security. He is also vice chair of the committee on international security and arms control of the National Academy of Science (“Biological Weapons: A Plague upon All Houses”, Foreign Policy Magazine)

It is a considerable comfort and undoubtedly a key to our survival that, so far, the main lines of defense against this threat have not depended on explicit policies or organized efforts. In the long course of evolution, the human body has developed physical barriers and a biochemical immune system whose sophistication and effectiveness exceed anything we could design or as yet even fully understand. But evolution is a sword that cuts both ways: New diseases emerge, while old diseases mutate and adapt. Throughout history, there have been epidemics during which human immunity has broken down on an epic scale. An infectious agent believed to have been the plague bacterium killed an estimated 20 mil- lion people over a four-year period in the fourteenth century, including nearly one-quarter of Western Europe's population at the time. Since its recognized appearance in 1981, some 20 variations of the HIV virus have infected an estimated 29.4 million worldwide, with 1.5 million people currently dying of AIDS each year. Malaria, tuberculosis, and cholera- once thought to be under control-are now making a comeback. As we enter the twenty-first century, changing conditions have enhanced the potential for widespread contagion. The rapid growth rate of the total world population, the unprecedented freedom of movement across inter- national borders, and scientific advances that expand the capability for the deliberate manipulation of pathogens are all cause for worry that the problem might be greater in the future than it has ever been in the past. The threat of infectious pathogens is not just an issue of public health, but a fundamental security problem for the species as a whole.

#### The brink is now---years of inter-disciplinary study create an overwhelming scientific consensus

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Seven globally significant, mainstream documents will, in one way or another, shape the way our generation sees the world which we need to change. These are as follows:¶ • Ecosystem degradation. The United Nations (UN) Millennium Ecosystem Assessment, compiled by 1,360 scientists from 95 countries and released in 2005 (with virtually no impact beyond the environmental sciences), has confirmed for the first time that 60% of the ecosystems upon which human systems depend for survival are degraded.7¶ • Global warming. The broadly accepted reports of the Intergovernmental Panel on Climate Change confirm that global warming is taking place due to release into the atmosphere of greenhouse gases caused by, among other things, the burning of fossil fuels, and that if average temperatures increase by 2˚C or more this is going to lead to major ecological and socio-economic changes, most of them for the worse, and the world’s poor will experience the most destructive consequences.17¶ • Oil peak. The 2008 World Energy Outlook, published by the International Energy Agency, declared the ‘end of cheap oil’.18 Although there is still some dispute over whether we have hit peak oil production or not, the fact remains that mainstream perspectives now broadly agree with the once vilified ‘peak oil’ perspective (see www.peakoil.net). Even the major oil companies now agree that oil prices are going to rise and alternatives to oil must be found sooner rather than later. Oil accounts for over 60% of the global economy’s energy needs. Our cities and global economy depend on cheap oil and changing this means a fundamental rethink of the assumptions underpinning nearly a century of urban planning dogma.¶ • Inequality. According to the UN Human Development Report for 1998, 20% of the global population who live in the richest countries account for 86% of total private consumption expenditure, whereas the poorest 20% account for 1.3%.19 Only the most callous still ignore the significance of inequality as a driver of many threats to social cohesion and a decent quality of life for all.¶ • Urban majority. According to generally accepted UN reports, the majority (i.e. just over 50%) of the world’s population was living in urban areas by 2007.6 According to the UN habitat report entitled The Challenge of Slums, one billion of the six billion people who live on the planet live in slums or, put differently, one-third of the world’s total urban population (rising to over 75% in the least developed countries) live in slums or what we refer to in South Africa as informal settlements.20¶ • Food insecurity. The International Assessment of Agricultural Science and Technology for Development21 is the most thorough global assessment of the state of agricultural science and practice that has ever been conducted. According to this report, modern industrial, chemical-intensive agriculture has caused significant ecological degradation which, in turn, will threaten food security in a world in which access to food is already highly unequal and demand is fast outstripping supply. Significantly, this report confirmed that ‘23% of all used land is degraded to some degree’.21¶ • Material flows. According to a 2011 report by the International Resource Panel (http://www.unep.org/resourcepanel), by 2005 the global economy depended on 60 billion tonnes of primary resources (biomass, fossil fuels, metals and industrial and construction minerals) and 500 exajoules of energy, an increase of 36% since 1980.22¶ The above trends combine to conjure up a picture of a highly unequal urbanised world, dependent on rapidly degrading ecosystem services, with looming threats triggered by climate change, high oil prices, food insecurities and resource depletion. This is what the mainstream literature on unsustainable development is worried about. This marks what is now increasingly referred to as the Anthropocene – the era in which humans have become the primary force of historico-geophysical evolution.23¶ Significantly, although these seven documents are in the policy domain they reflect the outcomes of many years of much deeper research on global change by scientists and researchers working across disciplines and diverse contexts on all continents. Although this process of scientific inquiry leading to policy change is most dramatic with respect to climate science,24 it is also true for the life sciences that fed into the outcomes expressed in the Millennium Ecosystem Assessment, the resource economics that has slowly established the significance of rising oil prices and, most recently, of all the rise of material flow analysis (more on these later). The rise of our ability to ‘see the planet’ has given rise to what Clark et al. have appropriately called the ‘second Copernican revolution’.25 The first, of course, goes back to the publication of De Revolutionibus Orbium Coelestium by Copernicus in 1530, but only ‘proven’ a century later by Galileo, who established by observation that Copernicus was correct when he claimed that the sun rather than Earth was the centre of the universe. This brilliant act of defining the planetary system through observation was a – perhaps the – defining moment that paved the way for the Enlightenment and the industrial epoch that followed. ¶ Clark et al. date the second Copernican revolution to the meeting in 2001 when delegates from over 100 countries signed the Amsterdam Declaration which established the ‘Earth-System Science Partnership’.25 The logical outcome of this profound paradigm shift is an increasingly sophisticated appreciation of what Rockstrom et al. have called our ‘planetary boundaries’ which define the ‘safe operating space for humanity’.26 The significance of the Rockstrom article is that it managed to integrate, for the first time, the quantifications of these ‘planetary boundaries’ that had already been established by various mono-disciplines. These included some key markers, such as not exceeding 350 parts per million of CO2 in the atmosphere; extracting 35 million tonnes of nitrogen from the atmosphere per year; an extinction rate of 10; global freshwater use of 4 000 km3 per year, and a fixed percentage of global land cover converted to cropland.26 Without the ‘second Copernican revolution’ a new science appropriate for a more sustainable world and the associated ethics would be unviable.

#### Studies prove a shift to organic agriculture can solve famines and soil loss – economic conditions mean government support is key now

Andersson 10 [(Par, Masters Degree in Environmental Science, Linnaeus University; advised by Jan Herrmann, Associate Professor Senior Lecturer, Department of Biology and Environmental Science) “Sustainable Agriculture Modernization, Orongo Village, western Kenya” Examination Project Work, Environmental Science] AT

The yield output in Organic agriculture compared to conventional agriculture practices is dependent on the quantity of external inputs at the farm and how good the growing conditions are at the site. At initial good growing conditions and high input of external synthetic inputs, the conversion to Organic agriculture is going to decrease the yield by around 40%. With medium external input and normal growing conditions the yield will stay almost the same, 92%. In poorly developed agriculture system with no external inputs, like the one often seen in developing countries, the yield increase can be as much as 180% 17 of the normal. Globally a conversion to Organic agriculture is estimated to have the potential to increase the yield with 132%18. The International Food Policy Research Institute (IFPRI) says that “a conversion to Organic agriculture in Sub-Saharan Africa is likely to increase food availability and decrease food import dependency”. This is under the conditions of well maintained and well adapted Organic agriculture practices. Another factor that makes the Organic agriculture potential especially big in poor areas and developing countries is the annual input cost. Because Organic agriculture is not dependent on external, often expensive, inputs and most resources required can be found on the farm, the input cost is around 40% less than that of conventional industrialized farming19. The need for irrigated water is also substantially lower in Organic agriculture compared to conventional farming. The crop rotation technique practiced in Organic agriculture can also help increase food security in poor areas. The diversity of a crop rotation system has bigger resilience to deceases and pest attacks, compared to a mono-crop system, to unexpected events like drought, falling market price, pest attacks etc. compared to mono-crop systems because it is more probable that some crops can withstand the attack better than others and can still bring income and food for the farmer. Organic agriculture is now practiced all over the world with almost all main agriculture crops. Still less than one percent of the world agriculture is certified Organic and in Africa only 0.12 percent of all agriculture is Organic20. The potential for Organic agriculture is big in Africa and there is no doubt it can be practiced on a much larger scale because it has been under similar biophysical circumstances in other places, especially in India. There is also no doubt that it can be beneficial for low-tech small scale farmers who today greatly suffer from infertile land and soil erosion because of ineffective agriculture practices. But for a substantial increase of Organic farmers in Africa, the farmers need to be aware of the option of Organic agriculture and how it is practiced. If the big potential will have a chance of being utilized, it must be a promotion and information spread from governments and/or NGOs about Organic agriculture 1.2.3 Kenyan Organic agriculture and where the Kenyan government stands The Kenyan government has in many ways taken the high-tech approach to their agriculture problems. The Kenyan Agriculture Research Institute (KARI) is promoting the use of genetically modified crops like hybrid maize and so called “BT-cotton”. The Kenyan Ministry of Agriculture is promoting the newly formed African Agriculture Technology Foundation (AATF) that wants to boost income of small scale farmers by novel genetic modification approach21 . Organic agriculture has not been formally recognized as an option to increase food security. The Kenyan Ministry of Environmental has said he is ready to “support” Organic agriculture. 22 Kenya has no national Organic standard but the NGO Kenya Organic agriculture Network (KOAN), which today is the main promoter and supporter of Organic agriculture in Kenya, is close to finalization of a first draft. In the mean time U.S and EU standards are used. Organic agriculture is growing in Kenya but at a slower rate than globally. 1.2.4 Organic market The Organic market is one of the fastest growing markets in the world both in clothes and food. The Organic food market has been growing annually with 15-20 percent the last fifteen years23. The demand for organically grown agriculture products is high and there is no sign that the market will be saturated in the coming years. The Organic cotton market has grown even more dramatically with almost 85% growth annually between 2005 and 2008, from $583 million 2005 to $3.5 billion 200824. The demand for Organic cotton keeps on growing and projections say that the market will keep on expanding the following years. The biggest Organic market is in North America and the EU. Organic food and clothes often have a price premium. This is more common in western markets. If the African Organic product can be linked through export to the western market the farmer can get a much better price than at the local market. An example is the Organic cotton. Locally the Kenyan farmer sells his cotton at around 20 – 22 KES/kg ($0.3/kg)25. This can be compared to the world price average of cotton 2008, $1.21/kg26. In other words, the Kenyan farmer gets on average a quarter of the price locally compared to the average international cotton farmer. Knowing this, the benefits of accessing the international market is undeniable and the fastest way of doing that is today through the Organic market. This can greatly encourage the Kenyan farmer to start farm organically, but the encouragement can only happen under certain conditions. The farmers need to be aware of the possibilities and be connected to the Organic market by an organization with few middlemen and with an actual interest of helping the farmer. The present global financial crisis could have bad consequences on the growth of the Organic market because of the usual premium price on organically grown crops27. This can have a both good and bad consequence for the Organic agriculture in Africa. Of course the export market and the premium price will be harder to access. But this can work as a boost for the local market and decrease the dependency on the export market. The local market is a necessity for a sustainable spreading of Organic agriculture. The optimal development is that Organic agriculture can spread in Kenya without being dependent on western intervention and premium prices, so that the local market would be sufficient. And the growing of the local market for organically produced crops is dependent on the awareness of the present problems and causes of them. This can create a goodwill for locally and organically produced crops, and if the price premium is not there, the organic crop can compete on the same terms as the conventional grown crops. Important to mention is that the Organically produced crops have no disadvantage to the conventional cultivated crops and can compete as good on the normal market also. 1.3 The potential of Organic agriculture in Orongo Farming in Orongo village is today using very simple tools and techniques when cultivating the land. The agriculture technique involves no or almost no input of external fertilizers and the fertility of the land has shown a decrease during the past 20 years. Almost all reports that are available today are indicating that under the circumstances similar to the ones seen in Orongo village, Organic agriculture can enhance soil fertility and enhance the yield 28. By enhancing soil fertility and using Organic agriculture components like cover crops and crop rotation in the correct way, soil erosion problems can be decreased substantially also. Today more than 80 percent of Orongo village is totally dependent on agriculture for income and food security. Still, 30 percent are suffering from undernourishment and 70 percent live under $½ a day. This leads to the conclusion that Orongo village is in need of agriculture modernization. The villagers also see agriculture projects as top priority for the village (Table 1). My assumption is that a modernization can be done by using Organic agriculture techniques if the components are analyzed and adapted to the special circumstances in Orongo and if the knowledge about Organic agriculture is spread considering the local culture. If this can be done it can lead to:  An increase of yield that can increase food security and lower the percentage undernourished in the village.  That today‟s big soil erosion and nutrient leakage problem caused by the present agriculture techniques can be reversed by Organic agriculture.  That the diversity of crops and lack of harmful chemicals can have health benefits on both the local ecosystem and humans.

#### Contention 2 is solvency

#### Agriculture in Africa is weak – government funding is key

Kaplan 13 [(Marcus, Environmental Policy and Natural Resources Management; Chinwe Ifejika Speranza, PhD, Senior Research Scientist for the Center for Development and the Environment; and Imme Scholz, Deputy Director of the German Development Institute, Member of the advisory council of the Austrian Research Foundation for International Development, Member of the German Council for Sustainable Development) “Promoting Resilient Agriculture in Sub- Saharan Africa as a Major Priority in Climate-Change Adaptation” Part of the report “Trade and Environmental Review 2013” by United Nations Conference on Trade and Development. German Development Institute] AT

In addition to economic trends, such as greater international competition for land for various uses, fluctuating food prices, higher energy prices, and international trade policies, climate change seriously threatens the productivity of the agricultural sector and its contribution to economic and social development. The poorer people who depend directly on ecosystem services for their livelihoods are the most vulnerable to permanent changes in temperature and water availability, as well as to an overall higher variability in climatic patterns. They not only have less access to various types of resources, but they also have fewer opportunities for diversifying their livelihoods to include other income-generating activities in order to reduce their dependence on agriculture and other ecosystem services. One of the main reasons for the poor situation and the high vulnerability of farmers and agriculture in SSA is the long-term neglect of this sector by both national governments and the international donor community starting in the 1980s. Public spending on farming accounts for only 4 per cent of total government spending in SSA (World Bank, 2008), and the agricultural sector is taxed at a relatively high level. In addition, the share of the agricultural sector in official development assistance (ODA) declined from 18 per cent in 1979 to 3.5 per cent in 2004 (World Bank, 2008). Today, the importance of agriculture for economic growth has generally been recognized, and national, regional and international organizations are making greater efforts to support its development (Challinor et al., 2007; Hazell et al., 2007). In their Maputo Declaration of 2003, member countries of the African Union called upon African governments to increase investment in the agricultural sector to at least 10 per cent of their national budgets. However, most African countries are still far from reaching this target. Moreover, even though the sector is now receiving more attention, owing to the long period of neglect, the many challenges ahead will be difficult to overcome. Furthermore, most public transfers are largely aimed at mitigating climate change rather than supporting adaptation to its impacts: 79 per cent of dedicated multi- and bilateral funds were approved for mitigation projects (84 per cent if activities for reducing emissions from deforestation and forest degradation (REDD) are included), and only 14 per cent for adaptation 37 projects. Bilateral ODA shows a slightly different pattern, with 70 per cent approved for mitigation and 30 per cent for adaptation (UNER 2010). Moreover, most activities and funds focus on reducing emissions and increasing efficiency in the energy and transport sectors, while adaptation and mitigation in agriculture are still underfunded. Looking at bilateral ODA again, agriculture received only 1 per cent of all funds dedicated to mitigation, compared with 10 per cent for adaptation activities in 2009 (UNER 2010).

#### Thus the plan: The Republic of Kenya should enact policies to support a shift from industrialized to organic agriculture among small farmers within its territory.

#### That solves a shift to organics – empirically confirmed by Cuba

Mwaura 10 [(Michael, Jomo Kenyatta University of Agriculture and Technology) “Cuba: National policy for sustainable agriculture” Kenya for the People, Feb 6] AT

In the previous article, we took the position that sustainable agriculture was the way forward to help build vibrant rural economies. In this article, we will study Cuba as a success story in sustainable organic farming. This farming revolution was forced upon the Cuban people by their practice of agribusiness to serve an export market that collapsed after the Soviet Union withdraw support. This situation is eerily similar to what is being practiced in Kenya today by the growing of cash crops for export although not to such a grand scale. The article below has been gleaned from several sources. A brief history From 1492 to 1898, Cuba was a colony of Spain. Both the native people and the forest were annihilated to make way for large cattle and sugar farms in the hands of a few wealthy owners and worked by slaves. In 1898, the United States entered into the Spanish-American war, Spain was easily defeated, and Cuba was under US military rule from 1898 to 1902. Over the next few decades, U.S businesses and individuals acquired some of the best land and US marines were stationed in Cuba to protect US interests. Sugar production continued to increase in importance at the expense of food production, which caused greater reliance on food imports. Wealth was concentrated in a few hands, and the vast majority of Cubans continued to live in poverty without access to land or incomes sufficient to feed their families. On December 31, 1958, the Batista government was overthrown, and a socialist government took power. The expropriation of US property in Cuba led to a US policy of isolation. By 1960, the isolationist policies caused Fidel Castro to turn to the Soviet Bloc. By 1962, Cuba effectively was a Soviet satellite. Cuban agricultural policies followed the Soviet model—large monocultural state farms were highly mechanized and heavily reliant on chemical fertilizers and pesticides. The Soviet Union subsidized this industrial model by trading its oil, chemicals, and machinery for Cuban sugar at preferential rates. Then, in 1989, the Berlin Wall fell. Almost overnight $6 billion in Soviet subsidies to Cuba disappeared. At the same time, the US trade embargo tightened, and Cuba was plunged into an economic crisis that was further exacerbated by the United States passing the "Cuban Democracy Act," in 1992 which prohibited assistance to Cuba in the form of food, medicine, and medical supplies. State implemented reform Cuba radically changed the state sector in 1993; 80% of the farmland was then held by the state and over half was turned over to workers in the form of cooperatives-UBPC (Basic Unit of Cooperative Production). Farmers lease state land rent free in perpetuity, in exchange for meeting production quotas. A 1994 reform permitted farmers to sell their excess production at farmers' markets. The reforms emphasized five basic principles: • Focus on agro ecological technology: this was supported by the state/university research, education, and extensions system. • Land reform; state farms were transformed to cooperatives or broken into smaller private units, and anyone wishing to farm could do so rent free. • Fair prices to farmers: Farmers can sell their excess production at farmers' markets; average incomes of farmers are three times that of other workers in Cuba. • Emphasis on local production: Urban agriculture played a big part in this reform. More on this below. • Farmer-to-farmer training:this served as the backbone of the extension system. Urban Agriculture Another area in which an innovative approach has been applied is that of urban agriculture. The Cuban government promoted and nurtured the public enthusiasm for urban agriculture. It ruled that any unused city lot, even state-owned, could be taken over by citizens to grow food. Growers were permitted to sell their surpluses on the open market. Government programs were launched to help city folks learn to farm. Experts explained organic growing, composting, and natural pest control and water conservation. Shops were opened to sell seeds and supplies. An estimated 1,000 kiosks for fresh local produce were set up at farm gates and busy street corners throughout Havana. The popular gardens range in size from a few square meters to large plots of land which are cultivated by individuals or community groups. Production in other agricultural areas The reforms have not yielded dramatic results for sugar, meat, or dairy, nor for traditional import crops (rice and beans). Cuba continues to rely on food imports, as it has since it was colonized. Cuba buys rice from India and China, dairy products from the European Union, grains from South America and Eastern Europe, and meat from Canada and Brazil. Cuba has to buy these products from distant countries, adding on average 30% to the cost of food imports over what they would pay for US products. Effect on meat production Meat production and dairy production were hit particularly hard by the loss of subsidized Soviet feed and petroleum. The loss of petroleum meant that animal traction became a strategy to reduce reliance on farm machinery. Animal traction is also better for soil management, particularly given the smaller farm size after land was redistributed. However, the conversion to animal traction was impeded by lack of oxen and expertise. The solution was to prohibit slaughter of cattle without government permission (in order to build up the herd) and to create "schools" to train the oxen (and presumably farmers). Other government programs Social equity is a clearly a higher priority for the Cuban government than personal liberty. Despite being the second poorest country in the Americas, there is no widespread hunger; housing is generally free, if dilapidated and crowded; Cubans are one of the most educated populations in the world; and there is universal free health care. All Cubans have access to a basic (although minimal) diet through their ration card. Cubans supplement this with food they grow, barter for, or buy at farm stands, farmers' markets, or dollar stores. The Future It seems likely that Cuba will continue to promote agroecological practices and to expand urban agriculture simply because they are yielding results. The bad experiences with large agricultural operations, both before and after communism, make it unlikely that anyone could credibly promote a return to large, high-input operations as a matter of national policy. The positive results that farmers, university researchers, and extension are getting from the transformation of Cuban agriculture will likely encourage them to continue to pursue sustainable practices whatever comes next. Cuban people are eating better and healthier than before, though things are far from perfect. However, the relevant comparison is to other Latin American countries; Cuba simply does not have the widespread hunger, destitution, and suffering that are commonplace in countries with much higher GDP per capita. Conclusion There are many lessons we can learn from Cuba for Kenya: • The government giving citizens plots to farm on in urban areas could go a long way to alleviate hunger and stabilize our food supplies in the urban areas. • The food ration card to ensure all Kenyans get access to a basic diet is a positive. The government could contract local and rural farmers for this program. • A barter system, food for food or food for services by urban and rural farmers would be an idea worth researching and implementing. • The possible establishment of a sustainable agricultural department by the government to train urban and rural farmers in organic agriculture • Discounted availability of seeds and agricultural supplies would help potential urban and rural farmers.

#### More solvency evidence

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First of all, it is important to remove or modify the existing tax and pricing policies that generate perverse incentives for sustainable production systems, such as overuse of pesticides, fertilizers, water, and fuel or encouraging land degradation. There should be a policy shift towards significantly increasing the efficiency of fertilizer and agro-chemical use and their replacement by soil-fertility-enriching (and carbon- absorptive) production methods that rely on multi-cropping, integrating crop and livestock production and the use of locally available bio-fertilizers and bio-pesticides. As most developing countries import all or the majority of the fertilizers and agro-chemicals used, a drastic reduction of their consumption therefore not only benefits the environment, but also leads to a reduction of the import bill and agricultural production costs.62 In India, for instance, overall public expenditures on agriculture have remained at approximately 11 per cent of agricultural GDP, while the share of subsidies for fertilizer, electricity and for price support of cereals and water has steadily risen at the expense of investments in public goods, such as research and development, irrigation, and rural roads (see below). Agricultural spending is about 4 times greater on subsidies than on such important public goods. In Zambia, only about 15 per cent of the 2003/2004 agricultural budget was spent on research, extension services, and rural infrastructure (World Bank, 2008: 115). Therefore, reallocating spending on private subsidies to public goods must be a central element of policy reform to encourage sustainable agricultural production. In addition to removing ‘perverse’ incentives, governments may also consider fiscal or market-based measures (e.g. GHG emission trading systems) to internalize GHG costs (for more information in this regard, see Kasterine and Vanzetti, 2010: 91–93). Second, assuring stability in land management and tenure systems is a very important policy issue. As the UN Special Rapporteur on the Right to Food put it “in a number of countries, the Green Revolution was effectively a substitute for agrarian reform: instead of encouraging increases in food production by redistributing land to the rural poor, it did so by technology” (De Schutter, 2009). In particular, small farmers need stable tenure systems to invest in soil fertility and production methods for regenerative agriculture.63 Agrarian reform should therefore continue to take centre stage on the political agenda of governments.64 This should include issues such as recognizing customary tenure, make lesser (oral) forms of evidence on land rights admissible, strengthen women’s land rights,65 allocate more land to smallholders with secured tenure, and establish decentralized land institutions (for more information, see World Bank, 2008: 139ff). Third, the share and effectiveness of public expenditures for agricultural development must be significantly increased. Public agricultural spending has been particularly lacklustre in agriculture-dominated developing countries (see table 2).66 Policymakers need to target investments carefully, putting resources into areas that have a large impact on improving physical and R&D infrastructure, linkages between farmers, and greater investment into extension education and services.67 While national-level investment in improving the transport and storage systems remains important, particular emphasis should be placed on developing locally shared infrastructure and improving value-added activities of farmers, to name but some key issues. Savings from the removal of perverse incentives can significantly reduce additional resource requirements in this regard. There could also be incentives in the form of (time-limited) land tax exemptions or lower cost credit to stimulate private investment. Such approaches are administratively simpler than subsidies and may not run afoul of WTO rules (Herren et al., 2011). According to the President of the International Fund for Agricultural Development (IFAD), “global food security can only be achieved through significant new investment in smallholder agriculture” (cited in Mactaggart, 2010b). Furthermore, governments need to pay special attention to strengthening the agricultural innovation and extension system for ecological farming methods 68, with particular emphasis on providing innovative, locally adapted and locally sourced solutions for smallholders.69 Paving the way for mainstreaming a mosaic of sustainable agricultural production methods requires integrative learning, in which farmers and researchers in agro-ecological sciences work together to determine how to best integrate traditional practices and new agro-ecological scientific discoveries. For this to take place, new channels and platforms for information exchange and skills’ transfer need to be developed (Herren et al., 2011). Enhanced regional and international South-South co-operation could play a useful role in strengthening agricultural R&D and extension capacity. The establishment of more regional centres of excellence, regional public research institutions and closer collaboration among existing research centres would be valuable steps in this direction (UNCTAD, 2010b).70 While public investment in agricultural research and development tripled in China and India in the 1980s and 1990s, it increased by barely a fifth in sub-Saharan Africa (declining in about half of these countries) (Pardey et al., 2006). With the exception of Brazil, India, West Asia and developed countries, the share of public R&D spending in agricultural GDP stagnated or even declined (see table 3).71 Fourth, agricultural policy is generally implemented by up to a dozen of governmental institutions. Achieving policy coherence and effective coordination of their activities are important for the paradigm shift towards regenerative agriculture as outlined above. Furthermore, coordination between environmental, natural resource, energy and agricultural policies is needed to maintain a consistent set of incentives for adoption of sustainable management systems and to facilitate cross-sectoral interactions, which are often involved in carbon crediting from agriculture. According to Stolze (2010), the creation of Support Platforms, which bring together potential public and private partners, supported by relevant experts, to jointly assess and further develop the priority activities identified may be worth considering. Fifth, regulations in the financial sector that facilitate the flow of funds for mitigation benefits to local communities are also important and have been a barrier to paying farmers for environmental benefits. Financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders’ ability to compete. Financial constraints originate from the lack of asset ownership to serve as collateral and the reticence to put assets at risk as collateral when they are vital to livelihoods. The demise of special credit lines to agriculture through public programmes or state banks has left huge gaps in financial services, still largely unfilled despite numerous institutional innovations (World Bank, 2008: 13). Therefore, special credit facilities (including micro-credit), community-oriented financial services, and the effective functioning of rural development banks are important in this regard. Another mechanism for facilitating access to financing for sustainable agricultural development is the broadening of payments for environmental services.72 Watershed and forest protection, for instance, create environmental services (clean drinking water, stable water flows to irrigation systems, carbon sequestration, and protection of biodiversity) for which providers should be compensated through payments from beneficiaries of these services. Interest in the widespread use of payments for environmental services has been growing, particularly in Latin America. In Nicaragua, for example, payments induced a reduction in the area of degraded pasture and annual crops by more than 50 per cent in favour of silvo-pastoralism, half of it by poor farmers (World Bank, 2008: 16). Sixth, small-scale farmers, their networks and sustainable production methods must again become an explicit component of national development strategies and an important target for development assistance (for more information, see Cook, 2009). Seventh, strengthening the performance of producer organizations and empowering the capacity of local communities should also figure prominently on the agenda of governments. Collective action by producer organizations is important for building research and skill capacity, reducing transaction costs, increasing market power, and strengthening representation in national and international policy forums. For smallholders, producer organizations are essential to achieve competitiveness (World Bank, 2008: 14). Strengthening the capacity of local communities in their stewardship of biodiversity, conservation of rangelands and fragile agro-ecological zones must be recognized as an essential strategy. Therefore, a policy framework around the stewardship of biodiversity at all levels needs to be created. Local communities can also play a very pro-active role in facilitating exchange of local knowledge, its blending with modern scientific tools and related dissemination through farmer-field schools, participatory plant breeding and community seed banks. Local communities can also be instrumental in promoting the de-centralized use of bio- and other renewable energy sources.73 Finally, agricultural mitigation and adaptation actions should be high priority candidates for being integrated into Sustainable Development Policy and Measures (SD-PAM), Nationally Appropriate Mitigation Actions (NAMAS), and National Adaptation Programmes of Action (NAPAs). According to Stolze (2010), priority should be given to adaptation measures that bring about mitigation consistent with sustainable development objectives. The integration of agricultural mitigation programmes into agricultural development strategies will need to be part of the overall effort to improve the sector’s performance and the livelihoods of small farmers (FAO, 2009a).74 The role of agriculture has to be closely interlinked with overall national development strategies (or plans) to bring about the structural transformation required for effective climate-change adaptation and mitigation.

## Modular

### Famines + Deforestation

#### Current industrial methods of agriculture in Sub-Saharan Africa cause massive soil loss – guarantees total collapseof agriculture and deforestation – a shift is badly needed to avoid massive famines

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Today 80 percent of all Sub-Sahara Africans are farmers and approximately 60 percent of these rely totally on agriculture for food and economic security1 . Sub-Sahara Africa is the place on Earth with the lowest food security in the world, more than 200 million people are suffering from undernourishment 2 . The high population growth is escalating the pressure on the agriculture land, land that already seems to be unable to feed all its inhabitants. Most of these farmers are small scale farmers using very simple techniques and having no access to modern agriculture knowledge and techniques. Africa is today the continent that, with a big margin, gets least yield from a hectare of land 3 . Asia gets on average three times more yield from one hectare of land and countries in the European Union and North America get on average 4.5 times more yield4 . This is not because Africa in any way has less fertile land or bad conditions for agriculture, quite the opposite, Africa has vast lands available for agriculture. But it is because of the agriculture techniques used for cultivating the land. Africa is also the poorest and least developed of all continents 5 and there is a strong correlation between yield and money input in the agriculture sector. This is partly explained by the high input of off-farm components like synthetic fertilizers and synthetic pesticides in industrialized agriculture used in western industrialized countries. These inputs are expensive but necessary in highly effective mono-crop agriculture systems to meet the high nutrient demand. The usage of this kind of system without the adding of external nutrient sources will fast deplete the land of nutrients and Organic matter and will be devastating for soil fertility. Many of the agriculture practices used in Africa are attempts to copy the western way of performing agriculture. This is for one part a colonial rest where western countries introduced industrialized agriculture to Africa but also different African governments´ misdirected attempt to enhance the agriculture output up to the much needed western standard by using western techniques. Using western agriculture techniques is very unlikely to work in western Africa, as being very different, based on other economic and biophysical realities. This is why badly adapted, ineffective and environmentally harmful agriculture techniques can be seen in Africa. It is undeniable that the present agriculture system in Africa is unsustainable and is really not working under the African conditions. There are alternative agriculture techniques available to the African farmer, but the spreading of the information and a convincing teaching of these systems involve a big cost. This also explains the correlation between yield and money input in the agriculture sector. Modernizing the African agriculture system considering the local economic, cultural and biophysical conditions is a key factor on enhancing the yield per hectare. Undernourishment cannot only be explained by the lack of food. Politically stable countries in the sub-Saharan region that had time to build up distribution channels and market infrastructure show a lower percentage undernourished than countries that had poor and unstable political power with the same amount of food produced6 . This shows the importance of not only good agriculture practices but also the importance of a working market system and good governance to lower the number of undernourished. In the sub-Saharan region the percentage of undernourished dropped marginally from 35 to 32 during the last decade 7 . This number might seem positive, but during the same period the environmental degradation has been enormous. The explanation of the decrease of undernourished is only by a fraction explained by better use of the existing agriculture land and better distribution but rather on the exploitation of new areas and the overuse of old agriculture areas. As a proof for that stands the rapidly accelerating problems of deforestation and soil erosion which both are strongly correlated with bad agriculture practices (see section 2.4 Soil erosion). According to the Food and Agriculture Organization (FAO) of the UN, Africa has the highest percentage of forest loss of any continent and the main reason, about 60 percent, for that is said to be the conversion to new agriculture land 8 . The organization “World rainforest movement” states that 10 percent of Africa´s forest disappeared only between 1980 and 1995. In Kenya only 3 percent of the indigenous forest are left. In Rwanda around 40 percent of the land is considered at high erosion risk and cannot be cultivated9 , a big increase compared to 20 – 30 years ago and this tendency can be seen in almost all sub-Sahara Africa countries. The bad agriculture practices used in sub-Sahara Africa so far been functioning because of the stock of good soil and abundance of trees created over times past. This stock is rapidly running out during a time when more people than ever are dependent on it. To change the agriculture before the soil stock is running out is especially critical in the poor rural areas of Africa. Poor smallholder farms in Africa cannot afford the synthetic fertilizers that can be a temporary way of postponing the consequences of an infertile and arid land. That is the last possibility and without that and no new land to exploit, the poor farmer is in a very serious situation. The prevailing system has encouraged the overuse and exploitation of new land, which is the practice that has generated most income for the farmer. Farmers who have been trying to be sustainable and restricted the output yield to the natural input of nutrients and Organic matter, have been competing with farmers who get a higher quantity of yield because of overuse and overexploitation. With the fluctuating market price on agriculture crops depending on the supply the sustainable farmers with the lower yield are left with a bad income, and many of these farmers have been forced into unsustainable practices to get an income big enough to support their family. “The tragedy of the commons” dilemma can be seen where the limited shared resources are being destroyed by multiple individuals acting in their own interest even when it is clear that it is in none‟s long term interest for this to happen10 . A big majority of the farmers are small scale farmers with only a few acres of land 11. All these small scale farmers are competing with each other on the same market with the same product. With high competition and high asset, the price is most certainly going to be low. When there is an excessive amount of the product relative to the demand there is a risk that some farmers will not get their product sold. So the farmer who puts a price according to what he needs to get a decent living standard from his income is at risk of not getting any buyers when the neighboring farmer is willing to sell for less. Then the first farmer must be prepared to lower his price, and at the same time much of his tangible living standard tightly correlated with his income, to get any of his products sold. This race continues until all farmers come to the point when they are no longer able to lower their price because this will deny them even the most minimal living standard. The competition can get even worse by international aid in the form of free agriculture products. This can have devastating effects on the local market price of agriculture products and therefore the living standards of small-scale farmers12 .

#### And deforestation from agricultures destroys Kenya’s forests, a crucial biodiversity hotspot

Obare and Wangwe no date [(Lynette, Assistant Lecturer at Strathmore University, Department of Geography) “Underlying Causes of Deforestation and Forest Degradation in Kenya” Forest Action Network] AT

Kenya’s forests are rapidly declining due to pressure from increased population and other land uses. With B of the country being arid and semi-arid, there is a lot of strain on the rest of the land since the economy is natural resource based. The productive area which forms about 20% of the country’s area falls in the medium and high potential agro-ecological zones and is under agriculture, forest and nature reserves. According to FAO Forest Resource Assessment 1990, Kenya is classified among the countries with low forest cover of less than 2% of the total land area. The dwindling forest cover has a severe effect on the climate, wildlife, streams, human population especially forest dwellers. 1.1 Introduction Mau Forest Complex is located in the Rift Valley province, about 200 km to the south-west of Nairobi and straddles four Districts: Kericho, Nakuru, Bomet, and Narok. It lies in the montane rain forest region which has a good potential for closed-canopy growth. The forest contains the largest remaining block of moist indigenous forest in East Africa covering an area of 900 km². The forest is gazetted and is under the managerial custody of the State's Forest Department. It was first gazetted in 1932 by the colonial government. Many alterations to the forest cover have taken place since it was first gazetted. These have resulted from excisions, additions, and boundary alterations. Bioregion The Mau forest is situated on the Mau escarpments in the Great Rift Valley. It forms the upper catchment of Sondu, Mara and Ewaso Ngiro rivers, which drain into Lakes Nakuru, Baringo, Victoria, Naivasha, Natron and Bogoria. The Kenya Forest Master Plan (Ministry of Natural Resources, 1994), put the Mau forest catchment protection value at 806 million Shillings per year, which is the highest of all the watershed forests in the country. It is important to note that some of these lakes are inter-boundary for example Lake Victoria which straddles three countries in East Africa namely Kenya Uganda and Tanzania. River Nile originates from this lake and flows to the Mediterranean Sea. Biodiversity Flora The forest is also rich in bio-diversity and hosts several indigenous tree species like Olea africana, Dombea goetzenii, Acacia spp, and Bamboo spp. among others. The forest has been described as being a part of the Afromontane archipelago-like. It comprises of Afromontane Forest and Afromontane Bamboo at the higher altitude. Specifically, it comprises of secondary plant community derived from Rain forest formation after logging at one time in its history (KIFCON 1994). The initial vegetation was dominated by Neoboutonia macrocalyx, which is gradually being replaced by the climax species. Being on an escarpment, the vegetation in the Mau forest is distinct at different altitudes. Rainfall is higher and continuous on the western side with no marked dry season, and mean annual rainfall of 2,000 mm and above. On the steep slopes of the escarpment, there is a Moist Montane Forest, characterized by a mixture of evergreen, semi-deciduous and deciduous trees. The average canopy height in this area is about 20 meters. The commonest tree species are Cyathea manniana, Ensete ventricosum, Acanthus eminens and Lobelia gibberoa. The Eastern side, which lies in a rain shadow, experiences a bimodal rainfall distribution, peaking in April and again in July/August, and mean annual rainfall varying from 1,000 to 1,500 mm and there is a dry forest type of ecosystem. This forest comprises mainly of Juniperus procera, Hypericum revoltum, Olea capensis, Podocarpus latifolius and Dombeya goetzeni. Glades are also common in the Mau forest most of which are as a result of fire burning the vegetation. It is thought that the fires are usually deliberately started as a way of improving the pastures or to clear land for cultivation especially in area with bamboo forests. High mountain bamboo thickets, Arundinaria alpina, are found at the topmost parts of the forest. Polystachya eurygnatha is an archid endemic to Mau forest while Chionanthus mildbraedii is a shrub recorded to be found only in Kenya. Fauna Among the large animals found in this forest are Bongo, Yellow backed Duiker, Golden cat, Giant forest hog, Leopard, Hyena, Buffalo, Colobus Monkey, and Impala. The Yellow backed Duiker, the Bongo, the Golden Cat, Leopard and Elephants are some of the important mammals of international conservation concern. Other nationally endangered species found only in this forest are the Potto, the spotted Necked Otter, and the striped Hyena. The forest is also rich in a variety of birds and is ranked second among the forests west of the Rift Valley. There are no endemic bird species in this forest but it is said to represent the richest montane avifauna in the Eastern Africa. 173 species have been spotted in the forest. 1.2 Forest-Community Relationship. Mau forest is the home of the largest group of forest dwellers, the Ogiek. Since time immemorial, the Ogiek people have been living inside the Mau forest, depending on the forest for subsistence and shelter. They divided the forest among their clans using natural features like rivers, valleys or hills as boundaries. In the period between 1904-1918, the colonial government tried to evict the community from the forest, but without success. The forest was gazetted in 1932 while these people were still inside. Once again in 1941, the colonial government tried unsuccessfully to evict them after gazetting it but this only drove them further inside the forest because there was no communication between them and the government. They did not know what was expected of them. It was unheard of for the government to consult with the community and it is said that one government officer who tried it in 1935 was rebuked and sacked by his senior. The postcolonial government did not change its attitude towards the Ogieks. It tried to evict the people in 1972 and 1977/87. In 1972, the government succeeded in evicting the people but most of them moved back into the forest after only six months. During the 1977/87 evictions, the government instructed the people to congregate around the forest stations in order to be resettled elsewhere later on. A small percentage (about 25%) did this while others went deeper into the forest. In 1992 the government forcefully evicted all the forest dwellers who were still inside the forest and concentrated them at the forest stations and promised to allocate them land. To date, most of the Ogieks live at the forest stations but some moved to the riverbanks where they also practise subsistence farming. The local administration then alienated that part of the forest that had been converted into plantation forest, subdivided it into five-acre plots and allocated it to individuals. The Ogieks allege that those people allocated the land were not members of their community but from the area around the forest. The forest was still gazetted and under the custody of the forest department. The forest department was not involved in the clear felling of the forest and the allocation of the land. The communities living around the forest also depend on the forest especially during the dry weather. A case study done in Njoro area East of the Mau forest indicated that the farming community in this area utilise the plantation area to grow food crops especially vegetables during the dry seasons. There has been a negative environmental impact on the forest since the clear felling started. Wildlife corridors have been tampered with exposing the forest dwellers and forest neighbours to attacks from elephants. Land that is on a slope of more than 50 % gradient has been allocated to farmers with no measures to check the soil erosion. The Ogieks have always relied on forests as a source of livelihood. Honey harvesting, hunting, gathering of wildfruits and nuts from the forests have been their occupation. They started keeping livestock in 1952. All the Ogiek groups have lived in or near high forests. Forest resources played an important role in Ogiek culture rendering their conservation vital. Whenever the Ogieks moved in the forests, they used their traditional set-up to conserve it. These conservation measures that were passed on to the community by the elders include: Ensuring that there were no forest outbreaks Allowing only the experienced elders to make beehives from the trees, so that the barks used to make such beehives are removed in a particular way that conserves the tree. The most commonly used tree for this is Juniperus procera. Creating awareness on important tree species like Dobeya goetzeni, Olea euro, Olea hochstetteri which were used for honey and herbs. The community members were prohibited from cutting these trees. In order to manage the forest properly the Ogieks allocated blocks of forests to clans to use. The forest areas are first occupied by a clan which divides it according to the family tree. Each family gives a name to their part of the forest, for identification and awareness of other families and customary respect for boundaries; the boundaries are recognised according to the customary land tenure system, where rivers, streams, valleys, glades, swamps and hills serve as boundaries. The Ogiek land tenure system aimed at defusing feuds resulting from hunting and beekeeping rights. 1.3 Direct causes and actors leading to deforestation and forest degradation Clearing natural forests to establish plantations In 1930, parts of Mau forests were cleared for the establishment of forest plantations using mainly exotic species. These occupy about 10% of the forest. The Ogiek community have been receding into the natural forests when this happens as their lifestyle depends on natural forests. Most of these plantations found surrounding the indigenous forests have been cleared to pave way for agriculture. Without the protection offered by the plantation the indigenous forests are now threatened. Logging Saw millers obtain licences to permit them to practise logging especially within the plantations. They also have to pay logging fees to the forest department. These charges are very low and not revised often to reflect the current economic situation. The saw-millers do not stick to the guidelines on logging and the Forest department does not have the mechanisms to enforce the rules and regulations under the current retrenchment process. The forests have been logged extensively in a non-systematic way. There is no annual allowable cut established and no adequate yield regulation in place. Often, there is intensive selective cutting and overexploitation leaving behind an inferior stock to mature as a final crop. This leads to further forest loss as the Department cannot rehabilitate the areas where trees have been felled. Conversion of natural forests into agricultural land: The Shamba system The Shamba system is adopted from the Taungya system of South America. It was devised by the Forest Department (FD) in 1943 to facilitate plantation establishment. This was prompted by the acute land shortage faced by communities after colonisation, and a need to reduce plantation establishment costs by the Forest Department. It was also meant to provide food security to those who practised it. Under the Shamba system, the cultivators were incorporated into the FD through employment and were permitted to clear and cultivate cut over indigenous bush cover from a specified land area; usually between 0.4-0.8 ha per year. This is done with the agreement that tree seedlings are planted on this land, and subsequently tended through weeding, pruning and safeguarding against game damage. In return the FD provided the resident cultivator with employment, social amenities and land for the cultivation of annual crops such as maize, potatoes, beans, peas and other vegetables. Cultivation proceeded until a time when tree seedlings were large enough to shade, and thus inhibit the growth of annual plant crops; usually a period of 3-5 years. The extent of the Shamba system was restricted to the high potential areas, comprising about 3% of Kenya's land area, and representing 12% of Kenya's total agricultural land. These areas are endowed with fertile soils of volcanic origin and a high annual (>1000 mm) rainfall with a bimodal distribution. Clearly, the Shamba system was an important arrangement which enhanced and sustained the food security of otherwise landless peasants. The system was discontinued in 1986 chiefly due to an expanded human population whose demand for forest land allocation exceeded the initial FD objective of plantation establishment. In addition, illegal activities (e.g.. forest clearing, tree poaching, hunting) from the resident cultivators and their families jeopardised forest protection and management. Interestingly, resident cultivators in forest areas with high wildlife populations voluntarily gave up the practice due to crop destruction and livestock predation. After the Shamba system was stopped, communities living around the forest moved in and settled in areas that were cleared. Forest degradation has escalated as they do not use indigenous forest management knowledge. In the 1990s the Forest Department introduced the Non-resident Cultivation (NRC) for the establishment of plantation forests. Through the approval of the respective District Development Committees, cultivators were involved in plantation development under certain terms and conditions that were enforced by the respective Forester, District Forest Officer and Provincial Forest Officer. The Non-resident cultivation is a modification of the Shamba system that attempts to reduce the risk of cultivators claiming squatter rights on forest land. The system however, fails to take into account the need to protect crops from wild animals and thieves that invade the plots at night. The Ogiek people did not practice any Shamba system or non-resident cultivation. Those who still reside in the forest do very little cultivation, but not within arrangements sanctioned and therefore controlled by the Forest department. Moreover, the Ogieks of Mau do not dwell in plantation forests where the Shamba system or non resident cultivation is done. Their homes are in natural forest reserves. Human Settlement Carving out of forests for human settlement is on the increase as the government is very keen to settle the forest dwelling communities along the forest boundaries or within the cleared forest plantations. However the Ogieks are strongly opposed to this and are keen on working out modalities of managing the forests together with the government. There has been continuous eviction of the community from the forests for resettlement outside the natural forests. Some community members are still back into the forests and do not want to change their current lifestyle. This resettlement is politically motivated as the community is aware of some people who have registered as part of the community in order to obtain land. So far the outsiders have been allocated land but some of the Ogieks are still concentrated in Forest Reserves. Forest excisions The process of forest protection was introduced under the ‘East Africa Forest Regulations, 1902’ by the first Conservator of Forests. These regulations allowed for the gazettement and degazettement of forests, and control of forest exploitation through a system of licences and fines. The Government through the Minister for Natural Resources has the express authority to degazette the forest through a legal process of excision. This excisions are done with the intent of converting the area to other alternative land uses like settlement, private agriculture that do not foster tree cover. The forests are degazetted then surveyed and demarcated for the proposed use. There are several loopholes in the excision process. These include: The excisions are made without consultation with the stakeholders. Procedures of collecting public views and sharpening their perspectives on causes-effects linkages as it may affect those aggrieved by the excision are never put in place and neither are provisions for compensation clear. A notice is placed in the Kenya Gazette and whoever wants to contest it is given 28 days to do so. The Minister is however under no obligation to consider the views in the final decision. The readership of the Kenya Gazette is very limited and not many people get to know about the notices. The Minister has the powers to put in a notification and he can be influenced by political and economic pressure but not necessarily for the common interest of the public. Excisions usually take place after the forests have already been illegally occupied. There is no environmental and socio-economic impact assessment done for the proposed changes in land-use leading to unsustainable land management. Fires In order to clear land for cultivation or grazing, those intending to settle into the forest set the vegetation on fire. The fires spread extensively and cause a lot of damage to the forest biodiversity. Charcoal burners also destroy the forest as they use traditional kilns which are not energy efficient, this activity is done illegally and therefore no one controls or tends the fires which in most cases destroy the areas surrounding the charcoal burning sites. The actors responsible for the mentioned direct causes include the Forest Department, saw millers, politicians, and influential persons. Since Mau Forest is a gazetted forest, and therefore government property, no individual or community has the legal right over this resource. This gives leeway for illegal exploitation as the people are alienated from their resources. The Ogieks are not able to intervene when they also see outsiders destroying what they have lived to conserve and this is very disheartening. There are a lot of powers vested onto the Minister of Natural Resources especially regarding excision. In a situation whereby policy decisions are entrusted in the hands of a few individuals they are not made to serve the public interest. 1.4 Community interventions to counteract the deforestation process and problems encountered Protection of the rivers and streams in the area The community members have a system of managing the forests through their lineage system. Each clan is in charge of a forest block, zoned along natural boundaries like rivers, hills and valleys. It is the responsibility of the elders to ensure that the resources are used in the right way. This knowledge is passed on to the young generation by this elders. The community members protect the streams by ensuring no cultivation is done within 50 metres on both sides of the rivers. However this can no longer be ensured as the Government is always removing them from the forests and resettling them elsewhere. There is a lot of infiltration into the forest by outsiders who are not keen in managing the river banks and just clear the trees for short term gain. Community involvement in forest conservation The Ogieks recognise the fact that they have lived in the forests and depended on them through out their lives. They have used their indigenous knowledge to sustainably utilise the forest products (honey, wild fruits and nuts, game meat) and ensure the resources are protected. They noted with concern that the destruction of the forest is done by outsiders who burn charcoal and fell trees for timber. They realise that those destroying the forests will have an impact on them even when they conserve the areas where they are allocated. They propose that their traditional forest management knowledge be incorporated into conventional forest management. They also request to be involved in the decision making process regarding forest management. They are limited by the present tenure system as they live in the forest but do not have ownership rights over it from the time it was gazetted. With the current resettlement programme they are keen to obtain ownership of the land then make tangible future conservation plans. They prefer to own the allocated land communally and manage it this way. They are keen on adoption of agroforestry practices and would still like to continue hunting, collecting honey and wild fruits from the natural forests. They are however, restricted from these activities and are opposed to any forced change in their way of life. Legal mechanisms In order to counter political interference and allocation to forest land to individuals the Ogieks have filed a case in court which is on-going and will take time considering the legal procedures to be followed. The defendants include the Attorney General, the Area District Officer, District Forest Officer, and the Office of the President (which gave the directive that parts of the forests be subdivided for settlement). 2. Description of the underlying causes and the actors responsible for them 2.1 Underlying causes of deforestation and forest degradation Weak policy formulation and enforcement The land policies in totality often tend to be agrarian favouring large-scale farmers. They are not consistent as they application varies with different regions or sectors depending on the land tenure systems. This leads to confusion, misuse, non-use, and indiscriminate destruction of the resources. The government has acknowledged the need for a serious review of the land tenure system but has not implemented this. The Policy Framework Paper on Economic Reforms for 1996-1998 confirmed the intention of the government to establish a Land Use Commission to address land tenure and land policy issues with a view to improving sustainable agricultural productivity and food security situation as well as ensuring biodiversity considerations are taken in land-use decisions. To date, no commission has been set up this being the last year of the reform period. Policy mandates on conservation, governance, accessibility and sustainable use of forestry resources does not offer a broader range of public participation and approval in its decision making process. The current policy and legal framework does not promote sustainable forest management. It was inherited from the colonial era and more concerned with control and distribution rather than management. It is based on Session Paper No. 1 of 1968 which was a restatement with minimal changes of White Paper No. 1 of 1957 that was the basis of colonial forest policy. It does not give room for collaborative forest management and neither does it take into consideration the lifestyle of the forest dwellers. It further fails to clarify issues of forest resource ownership, accessibility, mechanism for public approval and redress in its judicial and administrative procedures. The policy is enacted through the Forest Act that vests a lot of power in the hands of the Minister for Natural Resources. An amended forest policy based on the Kenya Forestry Master Plan that recommends the development of several forms of partnerships which will incorporate and involve all forestry stakeholders in forest management is yet to be tabled in parliament for debate. The Ogieks lived in the forest before it was gazetted and it is their ancestral land. They had customary land rights over the forests. The forest dwellers find themselves in a very precarious position as they do not have security of tenure under the present system and are often victims of inappropriate decisions made for them. For instance they have been evicted from the forest many times and are no longer provided with social amenities in the forest. They are also prohibited from grazing, hunting and collecting honey in the forest. In terms of enforcement, the penalties that are laid down on infringement of forest land is very low compared to the potential gains from illegal activities. Those in-charge enforcing the legislation are lax as they not well motivated to do so and often work together with those destroying the forests. Political factors As a result of political rivalry, forests were given to supporters of particular politicians as a bribe or repayment for political patronage. Most of the forest was subdivided into five hectares plot for allocation just before the last elections. This was done to woo the voters from particular communities. There were a lot of outsiders posing as Ogieks in order to obtain land. There has also been a move to try and assimilate the Ogieks into bigger tribes. Those allocated the land are after quick gain and not interested in conservation. In any case this sub-division interferes with forest biodiversity as the plots are put under different land use systems. The decision regarding forests lies in the hands of the Minister of Natural Resources who is influenced by other top politicians. Natural resources are destroyed to enrich the political royalty. Therefore it is the politically correct who benefit from forest excisions. The decision to subdivide Mau forest was made in an ad-hoc manner without consultation with those depending on them or the environmentalists. Even the Forest department was not consulted on this issue yet they are the custodian of this forest. The forest dwellers adversely affected by such decisions. Macro economic policies Cash crop production for export: Cash crop farming is on the increase on the cleared portions of forest. These cash crops are grown for export to the industrialised countries and compete in the world market to earn the country the much needed foreign exchange. The crops grown include tea and pyrethrum. The Ogieks claimed that pyrethrum and pesticides applied on the farms kill bees and have rendered bee keeping unviable. Bee keeping is affected by the growing of pyrethrum and the use of pesticides on the farm, it is therefore not a suitable alternative to harvesting of honey in the forest. Nyayo Tea Zones Development Corporation was assigned forest land in order to grow tea to provide a buffer between the agricultural land and forests designated for protection as well as an alternative source of income and employment. This was established by Presidential order in 1986 and Act of Parliament in 1988. The approximate boundary planting width that the zones were to occupy were not formally established but a general width of 100m into the forest was nominally accepted. Little consideration was given to the suitability of these areas, they are moderate to poor for tea growing in some parts. Further, the areas have been affected by poor management and poor access leading to further degradation of the forest. This tea zones have been the largest alternative use of forest land in Mau, out of a total of 2152 ha cleared in Mau Forest, only 542 ha were planted with tea leading to serious forest loss and degradation. The market promotes growing of these commodities for global trading thus impact on the activities at the local level. Liberalisation The liberalisation process has put a lot of emphasis on the privatisation of public land and forests resulting in the non recognition of customary resource tenure. The Ogieks have been denied their ancestral rights to the land they occupy. The government is in the process of issuing title deeds for forests and this process can be abused in terms of area the area quoted in the title deed being much less than the actual forest area. Structural Adjustment Programmes: As a result of the restructuring process going on the Government has had to trim the public sector and reduce the budget allocated to its various departments. The Forest department has not been spared from this. Most of the forest guards have been retrenched making it very difficult for the forests to be managed well. This encourages illegal use of forests. Population pressure Kenya’s population is concentrated on the arable land which is about 20% of the country’s area. This puts a lot of strain on the forests which are seen as ‘free land for potential use’. In Mau Forest, those coming from outside (the forest neighbours) would like to reap maximum benefits from it. They come to get land for cultivation (some practise commercial tractor farming) and grazing. They supplement their income by felling indigenous trees for charcoal. The Ogieks are keen on utilising the forest sustainably as they depend on it for their livelihood. This brings about a lot of conflict between these two groups resulting to further destruction.

#### Biodiversity loss in specific hotspots causes extinction and disease spread

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In the 20 th century, we became aware that the fate of biodiversity and the fate of humans are intimately interconnected. Before this, only some religions (and a few philosophers) predicted the end of life onEarth or human extinction through different versions of Armageddon, which was generally caused by thedivine consequences of wayward human behaviour. Darwin’s theory of evolution provided the means to un-derstand continual species extinctions, and scientists began to unearth the evidence of previous mass extinc-tions. However, the idea that extinction might extend to the human species was not taken up until the 20 th century, when it was argued that all species invariably become extinct (Raup 1991). Scientists came to un-derstand that the human species could disappear through catastrophic natural events, much as the dinosaursdisappeared, as a result of bolide impacts or large-scale volcanism. A secular concept of self-annihilationemerged less than 50 years ago with the spectre of global nuclear holocaust, which would also render muchother life on Earth unviable (see e.g. Robock et al. 2007), and where the life that remained would be distinct-ly antithetical to humans. Many now argue that there are other catastrophic threats to the human species,some of which threaten life on Earth more generally (Rees 2003, Posner 2004, Bostrom & Cirkovic 2008,Al-Rodhan 2009). We can only speculate whether the sixth mass extinction of species that appears to be un-derway has implications for the continued evolution of the human species, but we do know that it is the syn-ergies and feedbacks between global environmental change and biodiversity change, combined with mala-daptive human responses to that change (e.g. global nuclear conflict; unintended effects of technological re-sponses), that leads to the most catastrophic scenarios.Critical questions that arise when considering biodiversity change, the threats that it poses to humanwellbeing, and the challenges that it presents for mitigation and human adaptation, are whether there are crit-ical thresholds or ‘tipping points’ related to biodiversity change, and whether such tipping points can lead or contribute, directly or indirectly to global tipping points or whether they ‘only’ have implications at local or regional scales. If there are such tipping points, what types of implications do they have for human wellbe-ing? For whom, where, and when? Further, can such tipping points be avoided, and are we prepared to dealwith (adapt to) them if they cannot?With biodiversity change, there are a number of vulnerabilities to which the majority of the globe’s human population are exposed not only because they are impacted by this change at local level, but also because even local changes can have global repercussions due of global interdependencies. One is the rapidemergence and transmission of new infectious diseases and pests that both threaten plants and animals (and thus the humans that depend upon them), as well as humans directly (e.g. Chivian & Bernstein 2008, Pong-siri et al. 2009, Keesing et al. 2010, Sharma 2010). A second is invasive species, where species disperse be-yond their ‘normal’ range, invade many different regions on different continents, affecting the invaded eco-systems in highly unpredictable ways (e.g. GISP n.d., Walther et al. 2009, Perrings et al. 2010). Both maycontribute strongly to a third such vulnerability, which is addressed here, presented by tipping points that may emerge at regional scale, such as the loss of the Amazon rainforest or the collapse of coral reefs, that can have extra-regional or even global repercussions not only due to the loss of species and ecosystems, but as well due to the loss of some of the ecosystem services that these provide e.g. as CO 2 sinks, which creates synergies with phenomena such as climate change and ocean acidification. Finally, the fourth vulnerability is posed by human maladaptation to any of these dynamics, where maladaptation can exacerbate biodiversity change and can lead to other negative effects for human welfare and ecosystems. Conflict over dwindling biological resources and ecosystem services is likely to become pervasive, and conflict over the understand-ing of the causes and effects of such change are likely to be just as serious. The global security implications of climate change are of great concern and are being assessed (e.g. GACGC 2007) but, to our knowledge, no such assessment exists for biodiversity change. Many of the global, regional, and national institutions that inthe past have evolved to manage human-biodiversity relations have so far been shown to be relatively inef-fective in stemming biodiversity loss (see e.g. CBD 2010) and thus they are likely to be even more ineffec-tive in dealing with surprises or with the large-scale repercussions of the loss of benefits, e.g. of food, andnew institutions will have to emerge if such threats are not to translate into local, regional, and even global,catastrophe. I argue that to successfully adapt to tipping points requires major changes in values, priorities, andinstitutions, particularly economic institutions: some of this change may be forthcoming but much is unlikelyto change quickly or profoundly enough to avoid such tipping points. A first step is to recognise the implica-tions of biodiversity change and potential tipping points for human wellbeing, which is currently impeded bycultural, cognitive and political barriers. A second is to prepare for such change, and a third is to prepare po-tential responses. II. Biodiversity Change and Tipping PointsA. Types, magnitudes and drivers of biodiversity change Aside from numerous potential sources of global catastrophe that could have such implications for life onEarth, we also find ourselves in a period when rates of species extinctions are estimated at 50-500 times background, which is the highest rate in the past 65 million years. The effects of ongoing rapid decline of biomes and homogenisation of biotas have been summarised as:changes in species geographic ranges, genetic risks of extinction, genetic assimilation, naturalselection, mutation rates, the shortening of food chains, the increase in nutrient-enriched nich-es permitting the ascendancy of microbes, and the differential survival of ecological general-ists. Rates of evolutionary processes will change in different groups, and speciation in thelarger vertebrates is essentially over…Whether the biota will continue to provide the dependa- ble ecological services humans take for granted is less clear…Our inability to make clearer predictions about the future of evolution has serious consequences for both biodiversity andhumanity (Woodruff 2001: 5471).The consequences for biodiversity and humanity depend in part on the timescale in reference. Some scien-tists argue that the Earth’s sixth extinction has already arrived, where an estimated loss of over 75% of spe-cies can be expected, possibly within 250 to 500 years (Barnosky et al. 2011), although others highlight thefact that projections of species extinction rates are controversial (Pereira et al. 2010). A mass extinction hardly bodes well for humans given the changes in the biosphere, in biomes and ecosystems, the associated pest and disease outbreaks, etc. that are associated with the different drivers of biodiversity change and the possi- ble critical thresholds or tipping points discussed below and in other papers presented here. Thus, the impli-cations of what is laid out below are magnified many fold and their effects become increasingly synergisticover time – 500 years is a very short period when we consider that Homininae appeared 8 million years ago, Homo sapiens 500,000 years ago, and modern humans 200,000 years ago – effectively, it constitutes only.25% of modern human history. Were humans to have a council of elders to deliberate the impact of our ac-tivities on future generations, it would certainly be extraordinarily alarmed and calling for radical transfor-mations as, indeed, are many scientists today.What is extraordinary about this possible 6 th extinction of species is that, since it is human-induced,it is not inevitable and depends, for example, on rates of climate and land-use change (Pereira et al. 2010).For the first time in the Earth’s history, a species is actually in a position to change the course of evolutionwrit large (Western 2001). This is reflected in the range of projected changes in biodiversity, which is very broad both because ‘there are major opportunities to intervene through better policies, but also because of large uncertainties in projections’ (Pereira et al. 2010: 1496). The possibilities and constraints to doing so arediscussed below and in other papers. Many scientists consider that the probability that we will change thecourse that evolution is currently on is low or very low without radical and immediate transformations invalues, knowledge, behaviour, markets, and governance. 3The causes of species extinctions and related change in biodiversity and ecosystem services can becharacterised as ‘synergistic stressors’ – climatic change coupled with ‘abnormally high ecological stressors’and ‘unusual interactions’ (e.g. between human-induced climate change, habitat fragmentation, pollution,over-harvesting, invasive species, pathogens and, some would add, the ‘expanding human biomass’ (Bar-nosky et al. 2011) although one could just as easilyadd ‘the expanding livestock biomass’ or ‘expanding biofuels production’)(Steinfeld et al. 2010, Wise et al.2009). Beyond this, humans have had a massive im- pact on the productivity, composition, and diversity of terrestrial ecosystems by changing the rates of supplyof major nutrients (nitrogen, phosphorus, and atmos- pheric CO 2 ), changing regional fire frequencies, [and]relaxing biogeographic barriers to species dispersal’(Tilman & Lehman 2001: 5433).Many human-dominated ecosystems are char-acterised by high natural resource extraction, shortfood chains, food web simplification, habitat and land-scape homogeneity, heavy use of petrochemicals andfossil fuels, convergent soil characteristics, modifiedhydrological cycles, reduced biotic and physical dis-turbance regimes, and global mobility of people, goodsand services (Western 2001) which give rise to theeffects in Box 1. In sum, humans are currently ‘appro- priating more than a third of all terrestrial primary production and, in so doing, have simplified or de-stroyed large portions of some types of ecosys-tems…many human environmental impacts are pro- jected to be two to three times stronger within 50years’ (Tilman & Lehman 2001: 5433). Notwithstand-ing their global significance, and not all human-dominated ecosystems are the same, not all humansare having the same impacts on biodiversity and eco-systems, which will also be taken up again below.According to the Millennium Ecosystem As-sessment (MEA) (Mace et al. 2005), at present habitatchange and fragmentation are the most important drivers of species extinctions, whereas invasive species andover-exploitation are the next most common, and disease, climate change, and pollution follow these in im- portance. Until recently, scientists generally agreed that species extinctions are principally due to habitat change and fragmentation, where it is human-induced land use changes such as agricultural expansion and especially tropical deforestation that have been the most important drivers, particularly since species richness is highest in tropical forests. As a result, most conservation activity has focused on reducing habitat loss andits impacts (Lewis 2006). Nevertheless, the major drivers of change in biodiversity vary per ecosystem type(Mace et al. 2005). For example, in tropical forests, habitat change has had a very high impact on biodiversi-ty over the past 100 years, followed by over-exploitation, whereas climate change, invasive species, and pol-lution have played minor roles. This is not the case in boreal forests, where nitrogen and phosphorus pollu-tion have been the major drivers.Since about the 1990s, however, there has been growing evidence that climate change is both interact-ing with these drivers and increasingly as a driver of biodiversity change in and of itself, to the point wheremost experts now agree that climate change will surpass habitat loss and fragmentation as the principle driv-er of species extinctions (Hannah et al. 2005, Thomas 2004, van Vuuren 2006). Climate change is not onlyincreasingly driving species extinctions: it also affects species composition in any given ecosystem throughchanges in range (distribution) of species, changes in timing of reproductions, and changes in the length of the growing season for plants (CBD 2007 and below). Today, scientists consider that it is the synergy be-tween habitat change and fragmentation and climate change that is the most threatening to biodiversity, giv-en that habitat loss and fragmentation can prohibit species from migrating and colonising new areas in re-sponse to climate change (Lovejoy & Hannah 2005).

#### Studies prove a shift to organic agriculture can solve famines and soil loss and resist external shocks including warming – economic conditions mean government support is key now

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The yield output in Organic agriculture compared to conventional agriculture practices is dependent on the quantity of external inputs at the farm and how good the growing conditions are at the site. At initial good growing conditions and high input of external synthetic inputs, the conversion to Organic agriculture is going to decrease the yield by around 40%. With medium external input and normal growing conditions the yield will stay almost the same, 92%. In poorly developed agriculture system with no external inputs, like the one often seen in developing countries, the yield increase can be as much as 180% 17 of the normal. Globally a conversion to Organic agriculture is estimated to have the potential to increase the yield with 132%18. The International Food Policy Research Institute (IFPRI) says that “a conversion to Organic agriculture in Sub-Saharan Africa is likely to increase food availability and decrease food import dependency”. This is under the conditions of well maintained and well adapted Organic agriculture practices. Another factor that makes the Organic agriculture potential especially big in poor areas and developing countries is the annual input cost. Because Organic agriculture is not dependent on external, often expensive, inputs and most resources required can be found on the farm, the input cost is around 40% less than that of conventional industrialized farming19. The need for irrigated water is also substantially lower in Organic agriculture compared to conventional farming. The crop rotation technique practiced in Organic agriculture can also help increase food security in poor areas. The diversity of a crop rotation system has bigger resilience to deceases and pest attacks, compared to a mono-crop system, to unexpected events like drought, falling market price, pest attacks etc. compared to mono-crop systems because it is more probable that some crops can withstand the attack better than others and can still bring income and food for the farmer. Organic agriculture is now practiced all over the world with almost all main agriculture crops. Still less than one percent of the world agriculture is certified Organic and in Africa only 0.12 percent of all agriculture is Organic20. The potential for Organic agriculture is big in Africa and there is no doubt it can be practiced on a much larger scale because it has been under similar biophysical circumstances in other places, especially in India. There is also no doubt that it can be beneficial for low-tech small scale farmers who today greatly suffer from infertile land and soil erosion because of ineffective agriculture practices. But for a substantial increase of Organic farmers in Africa, the farmers need to be aware of the option of Organic agriculture and how it is practiced. If the big potential will have a chance of being utilized, it must be a promotion and information spread from governments and/or NGOs about Organic agriculture 1.2.3 Kenyan Organic agriculture and where the Kenyan government stands The Kenyan government has in many ways taken the high-tech approach to their agriculture problems. The Kenyan Agriculture Research Institute (KARI) is promoting the use of genetically modified crops like hybrid maize and so called “BT-cotton”. The Kenyan Ministry of Agriculture is promoting the newly formed African Agriculture Technology Foundation (AATF) that wants to boost income of small scale farmers by novel genetic modification approach21 . Organic agriculture has not been formally recognized as an option to increase food security. The Kenyan Ministry of Environmental has said he is ready to “support” Organic agriculture. 22 Kenya has no national Organic standard but the NGO Kenya Organic agriculture Network (KOAN), which today is the main promoter and supporter of Organic agriculture in Kenya, is close to finalization of a first draft. In the mean time U.S and EU standards are used. Organic agriculture is growing in Kenya but at a slower rate than globally. 1.2.4 Organic market The Organic market is one of the fastest growing markets in the world both in clothes and food. The Organic food market has been growing annually with 15-20 percent the last fifteen years23. The demand for organically grown agriculture products is high and there is no sign that the market will be saturated in the coming years. The Organic cotton market has grown even more dramatically with almost 85% growth annually between 2005 and 2008, from $583 million 2005 to $3.5 billion 200824. The demand for Organic cotton keeps on growing and projections say that the market will keep on expanding the following years. The biggest Organic market is in North America and the EU. Organic food and clothes often have a price premium. This is more common in western markets. If the African Organic product can be linked through export to the western market the farmer can get a much better price than at the local market. An example is the Organic cotton. Locally the Kenyan farmer sells his cotton at around 20 – 22 KES/kg ($0.3/kg)25. This can be compared to the world price average of cotton 2008, $1.21/kg26. In other words, the Kenyan farmer gets on average a quarter of the price locally compared to the average international cotton farmer. Knowing this, the benefits of accessing the international market is undeniable and the fastest way of doing that is today through the Organic market. This can greatly encourage the Kenyan farmer to start farm organically, but the encouragement can only happen under certain conditions. The farmers need to be aware of the possibilities and be connected to the Organic market by an organization with few middlemen and with an actual interest of helping the farmer. The present global financial crisis could have bad consequences on the growth of the Organic market because of the usual premium price on organically grown crops27. This can have a both good and bad consequence for the Organic agriculture in Africa. Of course the export market and the premium price will be harder to access. But this can work as a boost for the local market and decrease the dependency on the export market. The local market is a necessity for a sustainable spreading of Organic agriculture. The optimal development is that Organic agriculture can spread in Kenya without being dependent on western intervention and premium prices, so that the local market would be sufficient. And the growing of the local market for organically produced crops is dependent on the awareness of the present problems and causes of them. This can create a goodwill for locally and organically produced crops, and if the price premium is not there, the organic crop can compete on the same terms as the conventional grown crops. Important to mention is that the Organically produced crops have no disadvantage to the conventional cultivated crops and can compete as good on the normal market also. 1.3 The potential of Organic agriculture in Orongo Farming in Orongo village is today using very simple tools and techniques when cultivating the land. The agriculture technique involves no or almost no input of external fertilizers and the fertility of the land has shown a decrease during the past 20 years. Almost all reports that are available today are indicating that under the circumstances similar to the ones seen in Orongo village, Organic agriculture can enhance soil fertility and enhance the yield 28. By enhancing soil fertility and using Organic agriculture components like cover crops and crop rotation in the correct way, soil erosion problems can be decreased substantially also. Today more than 80 percent of Orongo village is totally dependent on agriculture for income and food security. Still, 30 percent are suffering from undernourishment and 70 percent live under $½ a day. This leads to the conclusion that Orongo village is in need of agriculture modernization. The villagers also see agriculture projects as top priority for the village (Table 1). My assumption is that a modernization can be done by using Organic agriculture techniques if the components are analyzed and adapted to the special circumstances in Orongo and if the knowledge about Organic agriculture is spread considering the local culture. If this can be done it can lead to:  An increase of yield that can increase food security and lower the percentage undernourished in the village.  That today‟s big soil erosion and nutrient leakage problem caused by the present agriculture techniques can be reversed by Organic agriculture.  That the diversity of crops and lack of harmful chemicals can have health benefits on both the local ecosystem and humans.

### Bees

#### Deforestation from agriculture destroys Kenyan forests, a crucial biodiversity hotspot – also, agriculture kills bees

Obare and Wangwe no date [(Lynette, Assistant Lecturer at Strathmore University, Department of Geography) “Underlying Causes of Deforestation and Forest Degradation in Kenya” Forest Action Network] AT

Macro economic policies Cash crop production for export: Cash crop farming is on the increase on the cleared portions of forest. These cash crops are grown for export to the industrialised countries and compete in the world market to earn the country the much needed foreign exchange. The crops grown include tea and pyrethrum. The Ogieks claimed that pyrethrum and pesticides applied on the farms kill bees and have rendered bee keeping unviable. Bee keeping is affected by the growing of pyrethrum and the use of pesticides on the farm, it is therefore not a suitable alternative to harvesting of honey in the forest. Nyayo Tea Zones Development Corporation was assigned forest land in order to grow tea to provide a buffer between the agricultural land and forests designated for protection as well as an alternative source of income and employment. This was established by Presidential order in 1986 and Act of Parliament in 1988. The approximate boundary planting width that the zones were to occupy were not formally established but a general width of 100m into the forest was nominally accepted. Little consideration was given to the suitability of these areas, they are moderate to poor for tea growing in some parts. Further, the areas have been affected by poor management and poor access leading to further degradation of the forest. This tea zones have been the largest alternative use of forest land in Mau, out of a total of 2152 ha cleared in Mau Forest, only 542 ha were planted with tea leading to serious forest loss and degradation. The market promotes growing of these commodities for global trading thus impact on the activities at the local level. Liberalisation The liberalisation process has put a lot of emphasis on the privatisation of public land and forests resulting in the non recognition of customary resource tenure. The Ogieks have been denied their ancestral rights to the land they occupy. The government is in the process of issuing title deeds for forests and this process can be abused in terms of area the area quoted in the title deed being much less than the actual forest area. Structural Adjustment Programmes: As a result of the restructuring process going on the Government has had to trim the public sector and reduce the budget allocated to its various departments. The Forest department has not been spared from this. Most of the forest guards have been retrenched making it very difficult for the forests to be managed well. This encourages illegal use of forests. Population pressure Kenya’s population is concentrated on the arable land which is about 20% of the country’s area. This puts a lot of strain on the forests which are seen as ‘free land for potential use’. In Mau Forest, those coming from outside (the forest neighbours) would like to reap maximum benefits from it. They come to get land for cultivation (some practise commercial tractor farming) and grazing. They supplement their income by felling indigenous trees for charcoal. The Ogieks are keen on utilising the forest sustainably as they depend on it for their livelihood. This brings about a lot of conflict between these two groups resulting to further destruction.

### Famines Impact---Disease

#### Famines and conflict triggers an international refugee crisis that spreads deadly disease

Smith 99 [(Jayna, ) “The Refugee Crisis: Evaluating the Effects of Displaced Populations on the World’s Environment” Journals on Trade & Environment, Winter 99] AT

One of the greatest challenges facing public health officials today has been preparing for the health problems experienced by large populations displaced by natural or man-made disasters. Because the difficulties experienced in long- and short-term refugee situations are so diverse, a diversity of approaches in disease surveillance, control, and prevention is warranted. organizations across the world are currently working to discover which approach can best be used to solve the refugee problem. The Pan American Health Organization, the United Nations High Commissioner for Refugees (UNHCR), and the United States Agency for International Development are just a few of the organizations that have produced reports and guidelines illustrating that appropriate, cost-effective disease prevention technology can be quickly applied in most situations that will impact the lives of the affected populations in a positive way. These efforts just underscore a common goal and commitment to a global health agenda that will inevitably improve the health status of people worldwide. In the past ten years, public health emergencies involving refugees have occurred with greater and greater frequency. Many of these emergencies involved some degree of forced population migration, and almost all have been associated with severe food shortages and famine. Droughts and floods--the most common of the natural disasters--have been partially responsible, but the most common causes of these emergencies have been war and civil strife. Since 1984, the number of refugees dependent for their survival on some type of international assistance has more than doubled to a current estimate of about 17 million people--almost all in developing countries where local resources have been insufficient for providing prompt and adequate assistance.' There are nearly 1620 million displaced persons who are trapped within their countries by civil wars and are unable to cross borders to seek help. The ongoing and renewed conflicts in West Africa, Central Asia, and in North America and the Caribbean, are complicating humanitarian responses and blocking solutions to refugee problems while prolonging human suffering. This is definitely an unprecedented challenge to the public health community. Addressing the problems facing the world's refugees, returnees, and other victims of displacement by disasters requires a universal spirit and a shared effort among the international community. How does one classify these disasters--natural and man-made-that have fueled the "refugee crisis"? One way is to describe the evolution of disasters in terms of a "trigger event" leading to "primary effects" and "secondary effects" on vulnerable groups . With rapid-onset naural disasters like earthquakes, the primary effects, deaths and injuries, may be high, but there are few secondary effects. With slow-onset natural disasters like droughts and man-made disasters such as war and civil strife, the secondary effects (i.e., decreased food availability, environmental damage, and population displacement) may lead to a higher delayed death toll than that of the initial event. Even though population displacement may result from numerous types of disasters, the two most common trigger events have been food deficits and war. These two events along with famine and population displacement have been linked risk factors for increased mortality in several of the world's areas. The purpose of this paper is to describe the public health consequences of famine, war and civil strife, and population displacement in developing countries and to present recent recommendations on public health programs of importance. These programs have been implemented in the past for the purpose of aiding refugees in need of outside help. At one point in time however, there was controversy over just who would be included as a "refugee". For example, in 1951, the United Nations Convention defined a refugee as "Any person who owing to a well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion is outside of his nationality and is unable, or owing to fear, is unwilling to avail himself in the protection of that country, or who, not having a nationality and being outside the country of his former habitual residence, is unable, or having such fear is unwilling to return to it. ,3 In 1969 this definition was expanded to include persons fleeing from war, civil disturbance, and violence of any kind. These definitions, however, exclude people who leave their birth country to find "economic betterment", as well as groups who flee from their homes for the above reasons but remain within the borders of their country of origin. There are few programs or international regulations that cover these internally displaced populations. Yet, it is estimated that more than half of all displaced persons world-wide are living within the borders of their own country .4 Of these few programs that do cover the internally displaced, the UNHCR has included asylum-seekers and returnees in their efforts to aid refugees. The UNHCR defines the internally displaced as those who may have been forced to flee their homes because their lives and/or liberty were at risk. But unlike refugees, they either could not or do not want to cross an international border. They may legally fall under the sovereignty of their own government but the government is unable or unwilling to protect them. Asylum-seekers are persons who have left their countries of origin and have applied for recognition as refugees in other countries and whose applications are still pending by the appropriate government. The largest group of asylum-seekers come from the industrialized nations in Europe and North America. Lastly are returnees who were of concern to UNHCR while outside of their country and upon their return remain so for a limited of time while UNHCR assists in their reintegration and monitors their well-being. As mentioned before, many public health emergencies associated with refugees involve famine within the area of concern. Famine does not just arise from problems with food production. Droughts and crop infestations may trigger famine, but lack of enough food for consumption may be due to economic collapse and loss of purchasing power in some sections of the population (i.e., the Indian famine of 1972). Other causes of famine have included disruption of food production and marketing by armed conflict (i.e., Biafra in 1968, Sudan in 1988, and Somalia in 1999) and widespread civil disturbances. Famine is usually caused by the amplification of a preexisting condition characterized by widespread poverty, intractable debt, underemployment, and high malnutrition prevalence. Under these conditions, a huge percentage of the population may experience starvation routinely. when additional burdens related to the availability of food come up, starvation tends to occur rapidly. In recent years, frequent crop failures in Ethiopia, Somalia, and Sudan and have been attributed to progressive deterioration of the environment, including deforestation, desertification, and poor agricultural practices. Populations that do experience famine may or may not displace themselves in order to improve food availability. Male family members may migrate to cities or neighboring countries to seek employment. But during a full-scale famine, whole families and villages may flee to other areas in desperate search of food. In most of the major population displacements within the past 20 years, however, people have been forced to flee because of fear for their physical security caused by war or civil strife. Famine in the absence of violence has generated few of the world's refugees. When these populations are forced to migrate in mass, they usually end up in camps or urban slums characterized by poor sanitation, overcrowding, sub-standard housing, and limited access to health services. Problems associated with refugees occur world-wide. The refugee crisis is unique to no one country. Areas hit hardest by this phenomenon and showing the greatest need for assistance include Rwanda, Central Asia, and North America and the Caribbean. In each case it is evident that the effects of displaced populations have affected several different people and nationalities in several different ways. The case of Rwanda dates back to 1994 when ethnic conflict was at the root of that year's war and genocide. Nearly one million people lost their lives while half of the country's 7.5 million population was uprooted during the fighting. More than 2.4 million fled to neighboring countries, mostly the Democratic Republic of the Congo (DRC), and the United Republic of Tanzania where they were given asylum and accommodated in refugee camps.' The current situation in Rwanda is quite shaky. The Government of National Unity, in place since the 1994 genocide, has expressed the wish for all Rwandans to return so that the country can begin rebuilding. There have been rehabilitation activities to start in most areas; but the northwest of the country remains insecure and inhospitable to rehabilitation efforts. While it is the most fertile part of the country, almost no food crops are being cultivated in the northwest--resulting in food shortages and poverty in the region and inflation in the rest of the country. These people who are in need of protection and assistance are helped by twp specific organizations--the UNHCR and the DRC. The UNHCR helps nearly 35,000 refugees: persons from the DRC who are accommodated in two camps, some 800 Burundian refugees housed in Kigeme, and urban refugees on an individual basis--all in addition to the 2.8 million returnees . Most refugees from this area are women, children, and elderly who require special attention. The UNHCR works to protect and provide material assistance to refugees from the DRC, Burundi, and other countries and helps the Government identify and implement durable solutions for the refugees, including repatriation, local integration, or resettlement. Different from the civil strife, refugee-producing situation in Rwanda is the environmental degradation and the ensuing competition for scarce natural resources that is at the root of Central Asia's refugee crisis. Some of the clearest examples of environmentally induced migration and displacement can be found in the former Soviet states of Central Asia. The UNHCR reports that in the first half of the 1990's, around 270,000 people in that region where displaced for such reasons . Many of Central Asia's problems are created by decades of agricultural exploitation, industrial pollution, and overgrazing. Under the agricultural system practiced by the Soviet authorities, Massive amounts of chemicals were used to control weed growth and to replace nutrients in the soil that had been lost. The residues of these chemicals are now poisoning the region's land and water and contaminating the food chain. This inevitably has made it increasingly difficult for some populations to remain in their usual residences. Furthermore, dust from the dried-up bed of the Aral Sea, a large lake situated between Kazakstan and Uzbekistan, containing large quantities of agricultural and industrial chemicals is now carried long distances by the wind. This has contributed to further pollution and desertification of the land. The economic and social consequences of this happening have been substantial. There has occurred a dramatic decline in agricultural production, an increase in the price of food, and declining health standards among the local population. Since 1992, nearly 100,000 people have left the Aral Sea area as a result of these problems. More prominent and mobile groups such as the Ethnic Russians have been the first to move while members of poorer and less mobile groups who lack the social connections to establish new homes elsewhere have been left behind. Tackling the issue of environmental degradation and displacement in Central Asia is not an easy task. The problem is extremely deep-rooted and was kept hidden for so long that it may be too late for effective remedial action to take place. Also, the Governments in the region are confronted with many other pressing issues and may lack the ability and resources to address the problem in a systematic manner. The cases within North America and the Caribbean are quite different from those in Central Asia and Rwanda. Neither civil strife nor environmental degradation serves as the root of the two's refugee problem. Both North America and the Caribbean have seen in increase in their numbers of refugees by way of North America hosts more than 1.3 million refugees and other persons of concern to UNHCR. The United States and Canada receive asylumseekers from nearly every refugee-producing country in the world. During the year of 1997, over 100,000 people applied for asylum in these two countries alone. In that same year, some 70,000 refugees were admitted to the to the United States (while Canada accepted 10,000) for resettlements Since the resolution of the 1994 Haitian refugee crisis, the Caribbean has been relatively calm. Less than 2,000 refugees are still in need of a long-lasting solution in the Caribbean--most of the numbers come from the 1,000 African refugees in Cuba and 600 Haitian refugees in the Dominican Republic. But there is still a potential for renewed refugee prevalence with the Caribbean becoming a destination and transit point for asylum-seekers from other areas of the continent. Moreover, competing priorities for added resources and help prevent such organizations as the UNHCR from maintaining a permanent presence in the Caribbean. Help is given erratically between the Caribbean nations of Antigua and Barbuda, the Bahamas, Grenada, Cuba, the Dominican Republic, Haiti, Jamaica, and Tobago. The UNHCR has been extremely active in its efforts to better the conditions of those refugees remaining in the Dominican Republic and in Cuba. Most of the refugees in Cuba are Africans who came to Cuba years ago for schooling. For these refugees, the solution includes both voluntary repatriation and resettlement. Available to refugees through the Centro de Trabajo Social Dominicano (CTSD) are self-sufficiency projects for Haitian refugees in the Dominican Republic with the objective of ending direct assistance to these refugees in 1999. one ramification of the "refugee crisis" shared by the aforementioned populations is the prevalence of communicable diseases which, in nearly all cases, has been the cause of the high morbidity and mortality rates. Measles, diarrhea diseases, and even malaria are the primary causes of morbidity and mortality among refugee and displaced populations. Other communicable diseases, i.e., meningitis, hepatitis, and typhoid fever have been observed among refugee populations. But, their contribution to the growing prevalence of disease among refugees has been relatively small. Densely populated camps with poor sanitation, unclean water supplies, and low-quality housing all contribute to the quick spread of disease in refugee camps. Interaction between malnutrition and infection in these populations has also contributed to the high rates of bleakness and fatality. Contracting the measles and diarrhea diseases are the most common in populations of displaced persons. Measles outbreaks have been one of the leading causes of death among the camp's children. In addition, measles have contributed to high malnutrition rates among those who have survived the initial illness. Diarrheal diseases have become a major problem primarily because of the inadequacy of the water supply and the poorly maintained sanitation facilities. Among Caribbean refugees, diarrhea diseases were responsible for 22.3% of mortality among children less than five years of age during a 3-year period. Malaria and meningitis are serious illnesses that also affect large numbers of the refugee population. Malaria is a major health problem in many areas that host large populations. Malnutrition and anemia conditions that are common among refugees may be directly related to persistent malaria infection or may compound the effects of malaria and lead to high mortality. Malaria is the leading cause of morbidity among adult refugees and in 1990 caused 18% of all deaths and 25% of deaths among children less than 5 years of age. Public health officials find malaria to be of particular concern when the refugee population has traveled through or into an area of higher endemicity than its region of origin. Overcrowding and practically no access to medical care are contributing factors in outbreaks of meningococcal meningitis among displaced populations. Although children less than 5 years of age are at the greatest risk for meningitis, meningococcal meningitis also occurs among older children and adults, mostly in densely populated areas. Although these diseases are of the greatest concern for public health officials being major causes of morbidity and mortality, other health problems deserve the attention of the public health practitioners in these settings.

#### **Disease causes extinction – migration is key**

Quammen 12 David, award-winning science writer, long-time columnist for Outside magazine for fifteen years, with work in National Geographic, Harper's, Rolling Stone, the New York Times Book Review and other periodicals, 9/29, “Could the next big animal-to-human disease wipe us out?,” The Guardian, pg. 29, Lexis

Infectious disease is all around us. It's one of the basic processes that ecologists study, along with predation and competition. Predators are big beasts that eat their prey from outside. Pathogens (disease-causing agents, such as viruses) are small beasts that eat their prey from within. Although infectious disease can seem grisly and dreadful, under ordinary conditions, it's every bit as natural as what lions do to wildebeests and zebras. But conditions aren't always ordinary. Just as predators have their accustomed prey, so do pathogens. And just as a lion might occasionally depart from its normal behaviour - to kill a cow instead of a wildebeest, or a human instead of a zebra - so a pathogen can shift to a new target. Aberrations occur. When a pathogen leaps from an animal into a person, and succeeds in establishing itself as an infectious presence, sometimes causing illness or death, the result is a zoonosis. It's a mildly technical term, zoonosis, unfamiliar to most people, but it helps clarify the biological complexities behind the ominous headlines about swine flu, bird flu, Sars, emerging diseases in general, and the threat of a global pandemic. It's a word of the future, destined for heavy use in the 21st century. Ebola and Marburg are zoonoses. So is bubonic plague. So was the so-called Spanish influenza of 1918-1919, which had its source in a wild aquatic bird and emerged to kill as many as 50 million people. All of the human influenzas are zoonoses. As are monkeypox, bovine tuberculosis, Lyme disease, West Nile fever, rabies and a strange new affliction called Nipah encephalitis, which has killed pigs and pig farmers in Malaysia. Each of these zoonoses reflects the action of a pathogen that can "spillover", crossing into people from other animals. Aids is a disease of zoonotic origin caused by a virus that, having reached humans through a few accidental events in western and central Africa, now passes human-to-human. This form of interspecies leap is not rare; about 60% of all human infectious diseases currently known either cross routinely or have recently crossed between other animals and us. Some of those - notably rabies - are familiar, widespread and still horrendously lethal, killing humans by the thousands despite centuries of efforts at coping with their effects. Others are new and inexplicably sporadic, claiming a few victims or a few hundred, and then disappearing for years. Zoonotic pathogens can hide. The least conspicuous strategy is to lurk within what's called a reservoir host: a living organism that carries the pathogen while suffering little or no illness. When a disease seems to disappear between outbreaks, it's often still lingering nearby, within some reservoir host. A rodent? A bird? A butterfly? A bat? To reside undetected is probably easiest wherever biological diversity is high and the ecosystem is relatively undisturbed. The converse is also true: ecological disturbance causes diseases to emerge. Shake a tree and things fall out. Michelle Barnes is an energetic, late 40s-ish woman, an avid rock climber and cyclist. Her auburn hair, she told me cheerily, came from a bottle. It approximates the original colour, but the original is gone. In 2008, her hair started falling out; the rest went grey "pretty much overnight". This was among the lesser effects of a mystery illness that had nearly killed her during January that year, just after she'd returned from Uganda. Her story paralleled the one Jaap Taal had told me about Astrid, with several key differences - the main one being that Michelle Barnes was still alive. Michelle and her husband, Rick Taylor, had wanted to see mountain gorillas, too. Their guide had taken them through Maramagambo Forest and into Python Cave. They, too, had to clamber across those slippery boulders. As a rock climber, Barnes said, she tends to be very conscious of where she places her hands. No, she didn't touch any guano. No, she was not bumped by a bat. By late afternoon they were back, watching the sunset. It was Christmas evening 2007. They arrived home on New Year's Day. On 4 January, Barnes woke up feeling as if someone had driven a needle into her skull. She was achy all over, feverish. "And then, as the day went on, I started developing a rash across my stomach." The rash spread. "Over the next 48 hours, I just went down really fast." By the time Barnes turned up at a hospital in suburban Denver, she was dehydrated; her white blood count was imperceptible; her kidneys and liver had begun shutting down. An infectious disease specialist, Dr Norman K Fujita, arranged for her to be tested for a range of infections that might be contracted in Africa. All came back negative, including the test for Marburg. Gradually her body regained strength and her organs began to recover. After 12 days, she left hospital, still weak and anaemic, still undiagnosed. In March she saw Fujita on a follow-up visit and he had her serum tested again for Marburg. Again, negative. Three more months passed, and Barnes, now grey-haired, lacking her old energy, suffering abdominal pain, unable to focus, got an email from a journalist she and Taylor had met on the Uganda trip, who had just seen a news article. In the Netherlands, a woman had died of Marburg after a Ugandan holiday during which she had visited a cave full of bats. Barnes spent the next 24 hours Googling every article on the case she could find. Early the following Monday morning, she was back at Dr Fujita's door. He agreed to test her a third time for Marburg. This time a lab technician crosschecked the third sample, and then the first sample. The new results went to Fujita, who called Barnes: "You're now an honorary infectious disease doctor. You've self-diagnosed, and the Marburg test came back positive." The Marburg virus had reappeared in Uganda in 2007. It was a small outbreak, affecting four miners, one of whom died, working at a site called Kitaka Cave. But Joosten's death, and Barnes's diagnosis, implied a change in the potential scope of the situation. That local Ugandans were dying of Marburg was a severe concern - sufficient to bring a response team of scientists in haste. But if tourists, too, were involved, tripping in and out of some python-infested Marburg repository, unprotected, and then boarding their return flights to other continents, the place was not just a peril for Ugandan miners and their families. It was also an international threat. The first team of scientists had collected about 800 bats from Kitaka Cave for dissecting and sampling, and marked and released more than 1,000, using beaded collars coded with a number. That team, including scientist Brian Amman, had found live Marburg virus in five bats. Entering Python Cave after Joosten's death, another team of scientists, again including Amman, came across one of the beaded collars they had placed on captured bats three months earlier and 30 miles away. "It confirmed my suspicions that these bats are moving," Amman said - and moving not only through the forest but from one roosting site to another. Travel of individual bats between far-flung roosts implied circumstances whereby Marburg virus might ultimately be transmitted all across Africa, from one bat encampment to another. It voided the comforting assumption that this virus is strictly localised. And it highlighted the complementary question: why don't outbreaks of Marburg virus disease happen more often? Marburg is only one instance to which that question applies. Why not more Ebola? Why not more Sars? In the case of Sars, the scenario could have been very much worse. Apart from the 2003 outbreak and the aftershock cases in early 2004, it hasn't recurred. . . so far. Eight thousand cases are relatively few for such an explosive infection; 774 people died, not 7 million. Several factors contributed to limiting the scope and impact of the outbreak, of which humanity's good luck was only one. Another was the speed and excellence of the laboratory diagnostics - finding the virus and identifying it. Still another was the brisk efficiency with which cases were isolated, contacts were traced and quarantine measures were instituted, first in southern China, then in Hong Kong, Singapore, Hanoi and Toronto. If the virus had arrived in a different sort of big city - more loosely governed, full of poor people, lacking first-rate medical institutions - it might have burned through a much larger segment of humanity. One further factor, possibly the most crucial, was inherent in the way Sars affects the human body: symptoms tend to appear in a person before, rather than after, that person becomes highly infectious. That allowed many Sars cases to be recognised, hospitalised and placed in isolation before they hit their peak of infectivity. With influenza and many other diseases, the order is reversed. That probably helped account for the scale of worldwide misery and death during the 1918-1919 influenza. And that infamous global pandemic occurred in the era before globalisation. Everything nowadays moves around the planet faster, including viruses. When the Next Big One comes, it will likely conform to the same perverse pattern as the 1918 influenza: high infectivity preceding notable symptoms. That will help it move through cities and airports like an angel of death. The Next Big One is a subject that disease scientists around the world often address. The most recent big one is Aids, of which the eventual total bigness cannot even be predicted - about 30 million deaths, 34 million living people infected, and with no end in sight. Fortunately, not every virus goes airborne from one host to another. If HIV-1 could, you and I might already be dead. If the rabies virus could, it would be the most horrific pathogen on the planet. The influenzas are well adapted for airborne transmission, which is why a new strain can circle the world within days. The Sars virus travels this route, too, or anyway by the respiratory droplets of sneezes and coughs - hanging in the air of a hotel corridor, moving through the cabin of an aeroplane - and that capacity, combined with its case fatality rate of almost 10%, is what made it so scary in 2003 to the people who understood it best. Human-to-human transmission is the crux. That capacity is what separates a bizarre, awful, localised, intermittent and mysterious disease (such as Ebola) from a global pandemic. Have you noticed the persistent, low-level buzz about avian influenza, the strain known as H5N1, among disease experts over the past 15 years? That's because avian flu worries them deeply, though it hasn't caused many human fatalities. Swine flu comes and goes periodically in the human population (as it came and went during 2009), sometimes causing a bad pandemic and sometimes (as in 2009) not so bad as expected; but avian flu resides in a different category of menacing possibility. It worries the flu scientists because they know that H5N1 influenza is extremely virulent in people, with a high lethality. As yet, there have been a relatively low number of cases, and it is poorly transmissible, so far, from human to human. It'll kill you if you catch it, very likely, but you're unlikely to catch it except by butchering an infected chicken. But if H5N1 mutates or reassembles itself in just the right way, if it adapts for human-to-human transmission, it could become the biggest and fastest killer disease since 1918. It got to Egypt in 2006 and has been especially problematic for that country. As of August 2011, there were 151 confirmed cases, of which 52 were fatal. That represents more than a quarter of all the world's known human cases of bird flu since H5N1 emerged in 1997. But here's a critical fact: those unfortunate Egyptian patients all seem to have acquired the virus directly from birds. This indicates that the virus hasn't yet found an efficient way to pass from one person to another. Two aspects of the situation are dangerous, according to biologist Robert Webster. The first is that Egypt, given its recent political upheavals, may be unable to staunch an outbreak of transmissible avian flu, if one occurs. His second concern is shared by influenza researchers and public health officials around the globe: with all that mutating, with all that contact between people and their infected birds, the virus could hit upon a genetic configuration making it highly transmissible among people. "As long as H5N1 is out there in the world," Webster told me, "there is the possibility of disaster. . . There is the theoretical possibility that it can acquire the ability to transmit human-to-human." He paused. "And then God help us." We're unique in the history of mammals. No other primate has ever weighed upon the planet to anything like the degree we do. In ecological terms, we are almost paradoxical: large-bodied and long-lived but grotesquely abundant. We are an outbreak. And here's the thing about outbreaks: they end. In some cases they end after many years, in others they end rather soon. In some cases they end gradually, in others they end with a crash. In certain cases, they end and recur and end again. Populations of tent caterpillars, for example, seem to rise steeply and fall sharply on a cycle of anywhere from five to 11 years. The crash endings are dramatic, and for a long while they seemed mysterious. What could account for such sudden and recurrent collapses? One possible factor is infectious [from] disease, and viruses in particular.

### Famines---Terror

#### Poverty is also an internal link to terrorists – provides recruits

Japan Times 10/7 [“Eradicating terrorism in Africa”] AT

Afour-day terrorist siege at the Westgate shopping mall in Kenya’s Nairobi in late September, which was carried out by extreme Islamists, killed nearly 70 people and injured more than 170 others. While sub-Saharan African countries have enjoyed economic growth for the past several years, the gap between the rich and the poor is expanding, providing a hotbed for terrorist activities by extreme Islamists. Governments in the region should strive to eradicate the poverty that provide fertile ground for the growth of terrorism by implementing polices to boost the growth of local agriculture and manufacturing industries. Al-Shabaab, an al-Qaida-linked group, claimed responsibility for the attack. The group is based in neighboring Somalia, where a civil war has dragged on for more than 20 years. Al-Qaida and its affiliated groups have been active in Africa for years now. On Aug. 7, 1998, it carried out simultaneous bombing attacks at the U.S. embassies in Nairobi and in Dar es Salaam, Tanzania, killing hundreds of people. In 2010, an al-Shabaab suicide bombing in neighboring Uganda killed 76. In January, al-Qaida au Maghreb Islamique carried out an attack on a gas facility in southeastern Algeria. Ten Japanese nationals were among those killed. A number of African countries gained independence from their European colonial masters in the 1960s. While some enjoyed smooth development, many others suffered under the rule of corrupt autocratic governments or were plagued by ethnic violence. In the 1970s, African countries were hit by economic crises as prices for agricultural products and mineral resources fell. Later severe drought killed many Africans and turned a great number of others into refugees. In and after 2003, when the Iraq War started, Africa entered a period of economic growth. Oil prices rose due to war in the Middle East and new oil-prospecting and extracting technologies made it economically feasible for a number of African countries to exploit their offshore oil resources. China also made inroads into Africa to gain access to energy and mineral resources. Per capita gross domestic product in sub-Saharan African countries increased from less than $500 at the beginning of the 21st century to about $1,000 in 2007. But revenue from the sale of natural resources and the influx of foreign capital has only enriched a small portion of the population. Mining and petroleum industries are not labor-intensive so they contribute little to boosting employment. In the meantime, the entry of manufactured goods from China and other emerging economies into Africa’s markets have taken a toll on local industries. Some 60 percent of the population in these countries still resides in rural villages. Poverty acts as a seedbed for terrorism — only by increasing economic opportunities in these impoverished areas can it be defeated. Japan and other developed countries must consider how to help sub-Saharan African countries improve vital infrastructure such as roads and railways, and increase the manufacturing of chemical fertilizers so local farmers can boost their production of food and industrial crops to sell to urban areas.

### Dead zones

#### industrial farming causes dead zones, which also cause water shortages

Wagner 9 [(Cynthia, Editor of The Futurist magazine, explores the technological, scientific, environmental, social, and policy trends shaping our collective future) “Oceans’ Dead Zones on the Rise” World Future Society, Nov-Dec 2009] AT

A predicted global increase in food consumption is likely to create an environmental crisis where it’s least expected. Studies link a rise in industrial food production to an increase in the already large number of so-called “dead zones” in coastal waters. Dead zones are so named because they lack sufficient oxygen to support fish, crustaceans, and other forms of marine life. The World Resources Institute (WRI) recently labeled them a “rapidly growing environmental crisis.” More than 400 have been identified worldwide, and researchers have spotted one in the Gulf of Mexico near the mouth of the Mississippi River that’s roughly the size of a small country — 7,500 square miles and growing. A major contributor to the problem is industrial agriculture, according to WRI. Too much animal manure and crop fertilizer is entering into and contaminating freshwater and coastal ecosystems. The nitrogen and phosphorous they contain overfertilize the algae and phytoplankton that grow on or near the surface of the water, causing the plants to grow at an unnaturally high rate. The unusually large amounts of algae inevitably die and sink to the bottom of the gulf. As the plant matter decomposes, it exhausts much of the oxygen from the surrounding water. This process is known as eutrophication. Since much of the manure from factory farms runs off into freshwater streams before being transported out to sea, the problem it isn’t limited to coastal waters. Eutrophication may be the primary reason for freshwater problems in the United States, WRI claims. And eutrophication doesn’t just impact the environment — it affects human health and economic systems as well. Global consumption of meat is expected to increase by more than 50% within the next 25 years. WRI reports that a surge in livestock production in particular would have serious repercussions for developing countries that lack strong, enforceable environmental regulations.

#### Ocean degradation causes extinction

Craig 3 [Robin Craig, Indiana University, Robin Kundis, Winter, 34 McGeorge L. Rev. 155, p. 264-266]

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far rarely been raised in political debates. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. More generally, "ocean ecosystems play a major role in the global geochemical cycling of all the elements that represent the basic building blocks of living organisms, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." In a very real and direct sense, therefore, human degradation of marine ecosystems impairs the planet's ability to support life. Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity, "indicating that **more diverse ecosystems are more stable**." Coral reef ecosystems are particularly dependent on their biodiversity. Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is higher on coral reefs than in any other marine environment. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire lawmakers and policymakers to admit that most of the time we really do not know what we are doing to the sea and hence should be preserving marine wilderness whenever we can - especially when the United States has within its territory relatively pristine marine ecosystems that may be unique in the world. We may not know much about the sea, but we do know this much: if we kill the ocean we kill ourselves, and we will take most of the biosphere with us**.** The Black Sea is almost dead, its once-complex and productive ecosystem almost entirely replaced by a monoculture of comb jellies, "starving out fish and dolphins, emptying fishermen's nets, and converting the web of life into brainless, wraith-like blobs of jelly." More importantly, the Black Sea is not necessarily unique. The Black Sea is a microcosm of what is happening to the ocean systems at large. The stresses piled up: overfishing, oil spills, industrial discharges, nutrient pollution, wetlands destruction, the introduction of an alien species. The sea weakened, slowly at first, then collapsed with shocking suddenness. The lessons of this tragedy should not be lost to the rest of us, because much of what happened here is being repeated all over the world. The ecological stresses imposed on the Black Sea were not unique to communism. Nor, sadly, was the failure of governments to respond to the emerging crisis. Oxygen-starved "dead zones" appear with increasing frequency off the coasts of major cities and major rivers, forcing marine animals to flee and killing all that cannot. Ethics as well as enlightened self-interest thus suggest that the United States should protect fully-functioning marine ecosystems wherever possible - even if a few fishers go out of business as a result.

### Water Sustainability---Link

#### A shift to organic ag solves water crisis and ecosystem disruption

Pretty 6—Professor of Environment and Society at University of Essex [Jules Pretty, Agroecological Approaches to Agricultural Development, Background Paper for the World Development Report 2008, November 2006]

Widespread appreciation of the `global water crisis’ recognizes that scarcity of clean water is affecting food production and conservation of ecosystems. By 2025 it is predicted that most developing countries will face either physical or economic water scarcity. Water diverted from rivers increased six fold between 1900 and 1995, far outpacing population growth. Increasing demand for fresh water now threatens the integrity of many aquatic ecosystems, and their associated environmental services. As agriculture accounts for 70% of current water withdrawals from rivers, so improving the productivity of water use in agriculture is a growing challenge. The potential for increasing food production while maintaining water-related ecosystem services rests on capacity to increase water productivity (WP), i.e. by realizing more kg of food per unit of water. Sustainable agricultural practices may do this by: i) removing limitations on productivity by enhancing soil fertility; ii) reducing soil evaporation through conservation tillage; iii) using more water efficient varieties; iv) reducing water losses to unrecoverable sinks; v) boosting productivity by supplemental irrigation in rainfed systems; and vi) inducing microclimatic changes to reduce crop water requirements (23). We calculated changes in WP for field crops in 144 projects from the data set (Table 5) based on reported crop yields and average potential evapotranspiration (ETp), for each project location during the relevant growing season. Actual evapotranspiration (ETa) was assumed to equal 80% of ETp, and ETa to remain a constant at different levels of productivity. Pg. 19

#### Specifically true for Kenya – Kenyan agriculture causes water shortage soon

CIEN no date [(Chemical Information Exchange Network (CIEN) is a network of people involved in the management of chemicals) “Environment Management” MINISTRY OF ENVIRONMENT AND MINERAL RESOURCES. No date, 04 is last date cited] AT

The current environmental issues of concern in Kenya currently: 1. Water pollution from urban and industrial water-this affects major urban areas like Nairobi, Kisumu, and Mombasa etc. Decline of flamingoes in L. Nakuru has been attributed to this cause. 2. Degradation of water quality from increased use of pesticides and fertilizers-this affects the agricultural areas and upsets ecosystems of local water systems e.g. L.Naivasha 3. Water hyacinth infestation in L. Victoria. 4. Solid waste management and disposal-Is a major challenge for the major urban areas. 5. Deforestation, desertification and soil erosion: these are intertwined and is blamed for climatic changes and depletion of water catchment areas Water resources Water resources are under pressure from agricultural chemicals and urban and industrial wastes, as well as from use for hydroelectric power. Kenya expects a shortage of water to pose a problem in the coming years. Water-quality problems in lakes, including water hyacinth infestation in Lake Victoria, have contributed to a substantial decline in fishing output and endangered fish species. Water pollution from urban and industrial wastes poses another environmental problem. Kenya has 20.2 cubic kilometers of renewable water resources with 76% used in farming activity and 4% used for industrial purposes. Only about 42% of the residents in rural areas and 88% of city dwellers have pure drinking water.

#### East African aquatic ecosystems are also a biodiversity hotspot and key to the Kenyan economy – agriculture is the key internal link

UNEP 2000 [(United Nations Environment Programme) “The environment of Eastern Africa”] AT

The Eastern African region covers four coastal countries along the East African coast (Kenya, Mozambique, Tanzania and Somalia), one large island state (Madagascar), three smaller archipelagic states (Comores, Mauritius and Seychelles), and the territories of France in the southwest Indian Ocean (La Réunion). The environment here defies generalization, and encompasses several biogeographic provinces. Ecotypes include coastal dry forestss, coastal dunes, coastal floodplains, fresh and brackish water marshes,mangvoe forests, coral reefs, reef-back lagoons, sandy beaches and seabird rookeries (sea cliffs and nearshore islands). These areas function as essential habitat for local species including fish and migratory birds, as shoreline stabilizers, and as buffers again coastal erosion. The coast of Eastern Africa is bathed by the great current systems of the Indian Ocean, which vary greatly with the seasonal monsoons. The Indian Ocean has particularly narrow continental shelves along this coast, and thus lower biological productivity than many coastal regions. The coast is rich in varieties and numbers of marine life forms, however. Extensive and highly diverse coral reefs fringe its narrow shelves shores. Species-rich mangroves with their commercially important oysters, crabs and mullet abound near river estuaries and along the coasts, particularly those of Mozambique, Tanzania, Kenya and southern Somalia. The region's people are dependent to a significant extent on coastal resources. Fisheries rely on the trawlable inter-reef areas and the species-rich mangroves with their commercially important oysters, crabs and mullet. Coastal ecosystems are important economically for tourism and recreation. Threats In 1981 a UNEP fact-finding mission to East Africa identified large-scale erosion, oil pollution, damaged coral reefs, ruined mangrove swamps, pollution from fertilizers and threats to precious marine animals as the major environmental problems in the region. The list of threats to the environment has changed little since then. A workshop in 1997 listed domestic sewage, solid domestic waste, habitat degradation, agrochemical pollution and industrial waste pollution. The region remains characterized by vulnerable economies, large populations with a high rate of population growth, and areas subject to environmental stress. Pollution The important and heavily fished reef zone close to shore is particularly vulnerable to pollution and silting. Oil is a major pollution threat to coastal ecosystems, owing to the heavy use of the tanker route along the East African coast. On any given day there are hundreds of tankers in the Region, many of them Very Large Crude Carriers (VLCCs). Slicks are brought in from spills in the open ocean by coastal currents, while operational discharges from ships and refineries add to the load. In recent decades, the growth of industry has brought an increasing volume of effluents to coastal waters. The use of agricultural chemicals has continued to grow, and sewage treatment continues to be inadequate in many parts of the region. Some species of marine animals are already endangered as a result of human activities, particularly the dugong or manatee, which is often caught in fishing nets and drowned. Marine turtles continue to decrease in numbers as their eggs are poached and the adults are killed for their meat and decorative shells. Eastern Africa is also undergoing an extraordinary rate of urbanization. As the cities have become overcrowded, water supplies have proven insufficient, and systems for drainage, sewerage and refuse disposal inadequate. Domestic sewage is discharged directly into rivers and in some cases the sea. Although industrialization remains slow relative to other parts of the world, it takes place without proper environmental impact assessments legislative controls, leading to further pressure on the environment. Rivers, creeks and the sea have become dumping sites for industrial wastes. Industries of major environmental concern in the region include textiles, tanneries, paper and pulp mills, breweries, chemical factories, cement factories, sugar factories, fertilizer factories, and oil refineries. In some countries, slaughter houses near the sea are a serious source of marine pollution. Desertification Long drawn out droughts, over-grazing and poor agricultural practices, deforestation and reclamation of wetlands for agriculture are all combining to bring about desertification in the coastal areas of East Africa. The continued high population growth rate is placing pressure on land beyond its carrying capacity, and driving out the traditional nomadic practices which allowed for environmental recovery. Livestock development is seldom accompanied by proper pasture management, leading to desert conditions in areas of concentration. When these destructive pressures occur in semi-arid areas with shallow soils, desertification and desert encroachment can becomes irreversible. The semi-arid parts of Eastern Africa are particularly vulnerable. Coastal degradation and erosion Human encroachment and activities such as animal husbandry and agriculture are rapidly degrading the coastal environment of Eastern Africa, resulting in deforestation, destruction of mangroves and disappearance of other vegetation; a decline in soil fertility, and the death of wildlife. Marine resources are directly threatened by these activities. Mangroves were once common in sheltered bays and estuaries, providing shelter to many important fish species and prawns. They are now threatened by intensive cropping to provide firewood, poles, tannin, medicinal products, paper pulp and timber, and to open up new space for aquaculture and salt production. Mangrove swamps are also threatened by fluctuations in the amount of fresh water and sediment reaching them caused by upstream hydraulic works, and indirectly by destruction of protective reefs.poles, firewood and by large-scale clearing for salt production. Coral reefs have been damaged by excessive siltation resulting from poor agricultural practices, deforestation along riverbanks, and the dredging and and dumping associated with harbour development. Many were damaged by fishing with dynamite and poison, especially before these methods were outlawed in part of the region. Tourists collect coral as souvenirs. More recently the bleaching of corals has become a severe problem. The shoreline in most of the region is receding as a result of coastal erosion: the shoreline retreat over parts of Tanzania has been estimated at between three and five metres per day. Barrier islands are particularly vulnerable to rising sea levels. Climate change A task team report on the implications of climate change for the Eastern African region (see UNEP: Potential impacts of expected climate change on coastal and near-shore environment. UNEP Regional Seas Reports and Studies No.140 (UNEP, 1992.) concluded that the region's low-lying coastal areas and marine ecosystems, water resources, terrestrial ecosystems and human settlements and coastal infrastructure are at risk as a consequence of climate change impacts. The economies of the region are dominated by agriculture. Fishing is an important source of food and contributes to the economy of the majority of the countries. Tourism is an important activity. The effects of climate change will be felt everywhere, perhaps most obviously in altered patterns of rainfall, coastal weathering, atmospheric pressure and evaporation. The spatial and temporal distribution of storms and cyclones will change their paths and frequency, and could well increase in intensity: Some scientists believe the terrible floods of early 2000 in Mozambique are but a taste of worse to come. Besides the direct toll on human lives, there will be impacts on coastal habitats such as coral reefs, lagoons, and mangroves. The reefs will be vulnerable to wave action and sea-level rise as well as sedimentation. Their destruction will lead to a decline in natural coastal defences and further encourage coastal erosion. The quality and quantity of water available from rainfall, rivers and ground water will be affected by changes in the distribution and amount of rainfall, evapo-transpiration, surface runoff, river discharge, recharge, and aquifer volumes. Drier and hotter conditions would place an inordinate pressure on water resources. Ecosystem effects could include latitudinal and altitudinal shifts in plant and animal species as well as, loss of biodiversity due to water scarcity and arid soil conditions. While agriculture might benefit somewhat from a global increase in CO2, moisture deficits would lower crop yields and require additional irrigation. Sea-level rise would increase the intrusion of saline water up river mouths and also decrease the area available for cultivation on low-lying coastal areas and river estuaries. Fisheries would be affected by changes to the breeding and migratory habits of most fish, hence, year to year variability of stocks could increase leading to a planning and management problems. Socio-economic activities, and infrastructure such as port facilities, waste disposal, roads, are already under stress. Climate change would create additional stress, hence reducing economic performance and growth. The human factor A critical problem in the region is the rapid rate of human population growth in some countries. Infrastructure has a hard time keeping up, with resulting strain on educational facilities as well as resources. Much of the population resides in the coastal areas, employed by the light industry located along the coast and others in the tourist industry. Most of the region's economies rely on agriculture and tourism which together contribute close to 50% of the gross domestic product. Tourism specifically is a main earner of foreign exchange in the coastal parts of most of the countries in the region. The population is unevenly distributed over the region. Northern Mozambique and Merca northwards of Somalia are almost uninhabited due to extreme climate conditions. Both mainland and island populations are concentrated on the coasts, where population growth is higher than average for the region as a whole, largely owing to migration, urbanization and favourable employment opportunities. The majority of these populations are employed by the light industry located along the coast and others in the tourist industry. Most of the economies rely on agriculture and tourism which together contribute close to 50% of the gross domestic product. Tourism specifically is a main earner of foreign exchange in the coastal parts of most of the countries in the region. The extremely rapid rate of population growth in some of the countries in the region is a critical factor, and the resulting pressure on social amenities, notably in the coastal cities, has become very high. The infrastructure is unable to keep pace with the population growth rate; educational facilities are no longer adequate and the resource base to support the required expansion programme meagre. There is great disparity in per capita income in the countries of the region for a variety of political and environmental reasons.

### Water Shortage Impact

#### Destruction of the water cycle causes extinction

GNG 12 (Global Nomad Group, an international NGO whose mission is to foster dialogue and understanding among the world’s youth, http://gng.org/wp-content/uploads/2012/12/Module-2-Flows-and-Cycles1.pdf?f22064)JFS

The water cycle renews fresh water, one of the most important resources for life on earth. Water is needed for food production, economic development and human survival. Climate change is predicted to have a range of impacts on water resources. Variation in temperature and rainfall may affect water availability, increase the frequency and severity of floods and droughts, and disrupt ecosystems that maintain water quality.5 By 2023, 1800 million people will be living in countries or regions with absolute water scarcity, and two-thirds of the world pollution could be under stress conditions.6 Water shortages are an important concern because they can increase conflict and public health problems, reduce food production and endanger the environment. In China, underwater aquifers that take millennia to fill have been depleted by the rapid growth of megacities with surging populations.7 Like China, many countries and regions are now satisfying the demand for water by withdrawing groundwater faster than it is replenished, thereby potentially depleting their supply for future generations. This type of mismanagement can lead to major disruptions in the natural water cycle. Creating a sustainable future will depend on learning how to effectively manage water resources. We must understand the capacities and limitations of the natural water cycle, the consequences of overdrawing water resources and how to conserve water resources that are still available.

### Water Wars Impact

#### Water shortage also causes escalating water wars – recent developments confirm likelihood of war

Rahman 11/1 [(Majeed, B.A. in Political Science from the University of Ghana, Professor of African Studies at the University of Wisconsin-Milawaukee) “The Geopolitics of Water in the Nile River Basin” Global Research, November 01, 2013] AT

Farming along the Nile is one of the major sources of livelihood for communities living along the concentrated Nile river basins, but the ensuing drought, famine, population growth and land degradation have impacted the water resources in the Nile river basin. The Environmental Protection Agency in its 2010 report also argued that land degradation and deforestation in the river basin due to excessive burning for land cultivation in many parts of the Nile River has virtually eroded the oasis making it extremely tough for cultivation and water conservation.15 Thus before the 1950s, there were fewer resentments on the Nile water resources by riparian countries, however with changing circumstances such as declining water resources, hunger, and diseases, riparian countries have decided to renegotiate themselves in order to access the Nile. Kenya together with Ethiopia are pioneering this process as seen in the cessionary address to parliament by the Member of Parliament for Kenya Paul Muite in 2004 who remarked “Kenyans are today importing agricultural produce from Egypt as a result of their use of the Nile water.” In a similar statement, Moses Wetangula, the assistant minister for foreign affairs remarked “Kenya will not accept any restriction on use of lake Victoria or the river Nile” and stated “ it however does not wish to be alone ranger in deciding how to use the waters, and has consequently sought the involvement of involved countries.”16 Methodology Conflict Theory and the Collier-Hoeffler Model Kofi Anan reiterated that “Unsustainable practices are woven deeply in to the fabric of modern life. Land degradation threatens food security. Forest destruction threatens biodiversity. Water pollution threatens public health, and fierce competition for fresh water may well become a source of conflicts and wars in the future.’’ This statement by Kofi Anan is buttressed by Amery when he alluded to the Egyptian Member of Parliament’s assertion that Egypt’s “national security should not only be viewed in military terms, but also in terms of wars over waters 17.” The horn of Africa has been bedeviled by conflicts, both interstate and civil wars for several years now. These conflicts are mainly concentrated on the north east and central Africa. While many of these conflicts have been disputes over land occupation in mainly oil rich areas of the Congo, others have been the issue of diverting water resources. This paper examines the water scarcity in the North East with an attempt to focus on Egypt and Ethiopia through the Collier-Hoefer model of theory of civil wars in order to construct the model on water scarcity with an attempt to reconcile the tensions over water resources and its effects on the people of the north East African people. There have been several applications and interpretations of the earlier conflict theorists propounded by earlier scholars such as Karl Marx, Lenin, and Weber. Collier-Hoeffer, also known as the C-H model is one of such interpretation of recent times. Their analyses on conflict is based on the framework of many variables such as tribes, identities, economics, religion and social status in Africa, and subjecting the data to a regression analysis and concluded that of the many variables identified in Africa and the examination of the 78 five year increments(1960-1999) in which conflicts occur, and of five year 1,600 inputs in which no conflicts occur, concluded that based on the data set that economic factors rather than ethnic, or religious, identities are the bane of conflicts in Africa. In complementing this model with the earlier conflict theory propounded by Karl Marx, Marx, recognized the significance of the social and interactions within a given society. These interactions according Karl Max are characterized by conflicts. Hence, the conflict between the proletariat and the bourgeoisie of the capitalist system forms a synthesis of the forces of the interaction within the system.18 Marx, again reiterated the fact that these social and human interactions is dialectical in the sense that when a dominant nation seeks to control dependent nations or peripheral countries what yields in consequence is the tension to rebel against the oppressor by dependent states in order to agitate for equitable and fair share of national resources. This point is consistent with the C-H model when they argued with empirical data on the causes of conflicts in Africa, and concluded that economic factors are the significant predictor of conflict in many parts of the African continent. Therefore, according to C-H, economic reasons contributed to a large extent the greater portion of conflicts in Africa19. While these economic reasons are varied and numerous due to the resources available in a given region and the allocation of resource whether naturally endowed or man-made, any form of competition to control these resources or allocation of resources will naturally generate two outcomes: tension and potential conflict, and cooperation. In this case, Egypt’s sole access to the Nile for centuries now has invariably gratified itself as the sole control of the Nile water resources. As a result of the 1929 mandate that gave Egypt absolute control of water resources in the Nile, she has worked to sabotage many riparian countries through other diplomatic and international treaties. Ethiopia has vowed to engage Egypt over the control of water resources in the Nile valley basin. This is exemplified in many water agreement initiated by Ethiopia and the other riparian countries to abrogate all previous agreement hitherto entered by Egypt. Consequently, Stars argues that the looming tension between Egypt and the riparian countries initiated by Ethiopia is a recipe for conflict in the North Eastern Africa20. For instance, these tensions are exemplified in Egypt’s response to Kenya’s assistant foreign affairs minister’s statement when Mohammed Abu Zeid, Egypt’s minister for water resources remarked that Kenya’s statements were a “a declaration of war” against Egypt and subsequently threatened Kenya of economic and political embargo.21 This looming tension among riparian countries is further worsened by Kenya’s continuing threat of engagement. In 2002, a senior Kenyan minister Raila Odinga, called for the review and renegotiation of the 1929 treaty which gave Egypt the right to veto construction projects on the Nile river basin, and said “it was signed on behalf of governments which were not in existence at that time.” This paper’s argument is further rooted in the idea that there are emerging players such as Kenya and Ethiopia in the horn of Africa as major hydro-political powers to engage Egypt’s hydro-hegemonic status. Prior to the Nile basin initiative in February 1999, Wondwosen, argues that there have been several similar water treaties such as the 1993 Technical Committee to promote development cooperation among riparian countries. Also, in 1995 the Nile Basin Action Plan was launched, and in 1997, the Canadian International Development Agency (CIDA) through collaborations with the World Bank attempted to foster cooperation among riparian countries to promote dialogue.22 This initiative including earlier treaties already mentioned shows the magnitude of the problem in the Nile basin, and of course the consensus necessary to equitably allocate water resources and thereby encourage development projects along the Nile. In 2010, for instance, Ethiopia announced that it was initiating a hydro-electric development projects in order to improve its country’s electric and energy needs. This announcement few days later saw resentment by Egypt and Egypt attempt to veto any such policy along the Nile. While Ethiopia is poised to making this project reality, Egypt has begun galvanizing international support in order to prevent Ethiopia from undertaking such projects. Cascao, argued that the asymmetrical flow of water resources in the Nile river basin and the access to physical flow of the blue Nile by Egypt and Sudan in the downstream has extremely heighten hydro-political tension over the Nile. These tensions have attracted the United Nations organizations interventions and other international organization on matters concerning the distribution and allocation of water resources in the Nile river basin and in which compensation are offered to other riparian countries unequal access to the distribution of water resources, especially those on the upstream who only benefit rainfall.23

#### African conflicts cause great power war

Glick 7 (Caroline – senior Middle East fellow at the Center for Security Policy, Condi’s African holiday, p. http://www.centerforsecuritypolicy.org/home.aspx?sid=56&categoryid=56&subcategoryid=90&newsid=11568)

The Horn of Africa is a dangerous and strategically vital place. Small wars, which rage continuously, can easily escalate into big wars. Local conflicts have regional and global aspects. All of the conflicts in this tinderbox, which controls shipping lanes from the Indian Ocean into the Red Sea, can potentially give rise to regional, and indeed global conflagrations between competing regional actors and global powers. Located in and around the Horn of Africa are the states of Eritrea, Djibouti, Ethiopia, Somalia, Sudan and Kenya. Eritrea, which gained independence from Ethiopia in 1993 after a 30-year civil war, is a major source of regional conflict. Eritrea has a nagging border dispute with Ethiopia which could easily ignite. The two countries fought a bloody border war from 1998-2000 over control of the town of Badme. Although a UN mandated body determined in 2002 that the disputed town belonged to Eritrea, Ethiopia has rejected the finding and so the conflict festers. Eritrea also fights a proxy war against Ethiopia in Somalia and in Ethiopia's rebellious Ogaden region. In Somalia, Eritrea is the primary sponsor of the al-Qaida-linked Islamic Courts Union which took control of Somalia in June, 2006. In November 2006, the ICU government declared jihad against Ethiopia and Kenya. Backed by the US, Ethiopia invaded Somalia last December to restore the recognized Transitional Federal Government to power which the ICU had deposed. Although the Ethiopian army successfully ousted the ICU from power in less than a week, backed by massive military and financial assistance from Eritrea, as well as Egypt and Libya, the ICU has waged a brutal insurgency against the TFG and the Ethiopian military for the past year. The senior ICU leadership, including Sheikh Hassan Dahir Aweys and Sheikh Sharif Ahmed have received safe haven in Eritrea. In September, the exiled ICU leadership held a nine-day conference in the Eritrean capital of Asmara where they formed the Alliance for the Re-Liberation of Somalia headed by Ahmed. Eritrean President-for-life Isaias Afwerki declared his country's support for the insurgents stating, "The Eritrean people's support to the Somali people is consistent and historical, as well as a legal and moral obligation." Although touted in the West as a moderate, Ahmed has openly supported jihad and terrorism against Ethiopia, Kenya and the West. Aweys, for his part, is wanted by the FBI in connection with his role in the bombing of the US embassies in Kenya and Tanzania in 1998. Then there is Eritrea's support for the Ogaden separatists in Ethiopia. The Ogaden rebels are Somali ethnics who live in the region bordering Somalia and Kenya. The rebellion is run by the Ogaden National Liberation Front (ONLF) which uses terror and sabotage as its preferred methods of warfare. It targets not only Ethiopian forces and military installations, but locals who wish to maintain their allegiance to Ethiopia or reach a negotiated resolution of the conflict. In their most sensationalist attack to date, in April ONLF terror forces attacked a Chinese-run oil installation in April killing nine Chinese and 65 Ethiopians. Ethiopia, for its part has fought a brutal counter-insurgency to restore its control over the region. Human rights organizations have accused Ethiopia of massive human rights abuses of civilians in Ogaden. Then there is Sudan. As Eric Reeves wrote in the Boston Globe on Saturday, "The brutal regime in Khartoum, the capital of Sudan, has orchestrated genocidal counter-insurgency war in Darfur for five years, and is now poised for victory in its ghastly assault on the region's African populations." The Islamist government of Omar Hasan Ahmad al-Bashir is refusing to accept non-African states as members of the hybrid UN-African Union peacekeeping mission to Darfur that is due to replace the undermanned and demoralized African Union peacekeeping force whose mandate ends on December 31. Without its UN component of non-African states, the UN Security Council mandated force will be unable to operate effectively. Khartoum's veto led Jean-Marie Guehenno, the UN undersecretary for peacekeeping to warn last month that the entire peacekeeping mission may have to be aborted. And the Darfur region is not the only one at risk. Due to Khartoum's refusal to carry out the terms of its 2005 peace treaty with the Southern Sudanese that ended Khartoum's 20-year war and genocide against the region's Christian and animist population, the unsteady peace may be undone. Given Khartoum's apparent sprint to victory over the international community regarding Darfur, there is little reason to doubt that once victory is secured, it will renew its attacks in the south. The conflicts in the Horn of Africa have regional and global dimensions. Regionally, Egypt has played a central role in sponsoring and fomenting conflicts. Egypt's meddling advances its interest of preventing the African nations from mounting a unified challenge to Egypt's colonial legacy of extraordinary rights to the waters of the Nile River which flows through all countries of the region.

#### International policy in Africa proves likelihood of war

Azikiwe 9/24 [(Abayomi, Editor, Pan-African News Wire) “US Wants to Stop China in Africa” The 4th Media 2013] AT

A political commentator says the United States has escalated military interventions in Africa in order to prevent China from gaining influence in Africa and maintain its dominance over the continent. The Pentagon, along with the Central Intelligence Agency as well as the National Security Agency, want to prevent China and other countries from gaining influence in Africa and “in a vain attempt to maintain US dominance” over the continent, Abayomi Azikiwe, editor of the Pan-African News Wire, told Press TV on Monday. “This of course, in the long run will not work because the US will be faced crises, as we see today in Somalia and as we see also in Kenya,” he added. “The United States, under both the previous government of George W. Bush, as well as the current regime of President Barack Obama, have started, and also escalated the intervention of the Pentagon in various African states,” the analyst said. A recent study has revealed even deeper US penetration in the African continent, Azikiwe said. “All of these interventions by the United States are clearly related to the strategic interest of the US in regard to the African continent,” he said. The Pentagon is reportedly preparing a list of targets for possible military strikes in Kenya and some other African countries aimed at targeting militants involved in Sunday’s deadly attack on a shopping mall in the Kenyan capital city of Nairobi. Somalia’s Al-Shabab fighters have reportedly claimed responsibility for the attack, saying it is in retaliation for Kenya’s military actions inside Somalia. Azikiwe also said that the US and other European powers have been “exploiting” East Africa’s oil and gas resources in recent months. He said these natural resources are “guiding US military policy towards the continent.”

#### Independently, African conflict and instability specifically in Kenya causes global terrorism

Dehez 5 [(Dustin, spokesmen on Defense of the CDU/CSU in the German parliament, Senior Research Fellow at the Düsseldorf Institute for Foreign and Security Policy and the Institute's Director for North-East African Studies, research focuses on the Horn of Africa, Military in Africa) “Why Africa matters: Terrorism in Africa - the forgotten continent once more?” World Security Network Foundation Dec 14] AT

One of the reasons why Africa deserves international attention is actually the war on terror. For international terrorist networks Africa is a main target; it serves as a safe haven and provides an effective financial basis with its large networks of informal economies. Africa has furthermore slowly emerged as one of the key strategic fields of international resources. The oil in the Gulf of Guinea is of major interest to the United States and Europe alike. The U.S. currently imports some 16% of its total oil imports from the African continent, Nigeria being one of its five most important oil suppliers. During the next four or five years these figures will rise substantially to some 25%. Its not only oil that is driving the interests of nations and corporations, its also other raw materials like coltan for relatively new industrial products, like mobile phones. The rising importance of African resources for the United States and Europe is particularly worrying as Africa had become what some have called the “underbelly for transnational terrorism”.2 Largely unnoticed major parts of Africa have been the scene for Islamisation since the late 1970s. It is this mixture of strategic resources, Islamisation, and state weakness that makes Africa so an inviting target for terrorism and terrorist networks. Terrorism in Africa The fact that terrorism has emerged as one of the most dangerous threats to the West was by no means a surprise. Back in 1995 the NATO Secretary General Willy Claes warned: The threat by fundamental Islam in Africa has to be taken seriously. “Islamic militancy has emerged as perhaps the single gravest threat to the NATO alliance and to Western Security.”3 In sub-Saharan Africa Islam has advanced significantly in the last couple of years. Some analysts fear that Niger may break up; into a Muslim dominated North and a Christian dominated South. Ethiopia, Nigeria and Senegal also have strong Muslim minorities.4 Some analysts go as far as claiming that there are already centres of Islam in Africa, considering the tropical zone along the Gulf of Guinea, the Sudanese Nile region and the East African coastal strip as such centres of Islam.5 There are strong Muslim minorities in Mocambique, Uganda, the Central African Republic (CAR), Liberia, Burkina, Tanzania, Sierra Leone, Cameroon and Côte d'Ivoire. In some other countries in Sub-Saharan Africa Islam is already a majority religion: Djibouti, Guinea, Mali, Niger, Nigeria, Senegal and Somalia.6 In Nigeria for instance some twelve provinces introduced the Shari’a as basic law and Osama bin Laden called it one of the countries he wanted to “liberate”.7 Somalia serves a safe haven for terrorist groups like Al-Itihaad al-Islamyia, which is linked to Al-Qaeda. This particular terrorist cell is held responsible for the attacks on U.S. soldiers during the U.N. mission Restore Hope, which left 18 U.S. soldiers dead and about 75 wounded.8 Islam is one index of identity, alongside ethnicity and regional loyalties and so far African Islam has been relatively moderate. But as David McCormack recently pointed out, African Islam is slowly turning into Islamism in Africa.9 In West Africa one of the major reasons for the instability of the coastal strip and its countries like Nigeria, Sierra Leone, Côte d'Ivoire, and Liberia is the divison into a Christian dominated South and a Muslim dominated North. More aggressive interpretations of Islam are promoted by Saudi Arabia and Iran, through building of mosques, financial support for the hajj and the provision of education. The presence of the Muslim World League and the World Assembly of Muslim Youths in East Africa has had a radicalising influence on the local population.10 The threat by fundamentalist Islam in Africa has to be taken seriously. Three years before 9/11, Africa was targeted by Al-Qaeda. The attacks on the U.S. embassies in Dar-es-Salaam and Nairobi caused 224 casualties, including 12 Americans. Since 1996 the number of international terrorist incidents in Africa increased dramatically. While in 1996 eleven incidents had been reported, the number exploded to fifty-five incidents in 2000.11 Although Africa is comparatively less effected by international terrorism (although it experienced some of the bloodiest attacks)12 that does not indicate that it deserves less attention. Quite on the contrary, it should be one of the major focuses in the struggle against terrorism. The core problems the international community has to face on the African continent are: ungoverned parts of Africa, especially in failed states, which often serve as safe haven for terrorists and other states that serve as transit hubs to the Middle East, like Kenya, conditions of conflict that may lead to more alienation from traditional identities and thus providing breeding ground for more radical forms of Islam, that nearly 40% of Africa's total population are already Muslim, while a more fundamentalist version of Islam is promoted with financial backing from Saudi Arabia and Iran, that widespread guerilla warfare might turn into urban terrorism,13 that informal economic structures might serve as an ideal environment to money laundering,14 and finally that Non Governmental Organisations (NGOs), donors, and other western institutions might provide an easy and inviting target for international terrorism.15 Given this background one might wonder, why Africa did not experience more terrorist attacks in the past.16 The main reason is that failing states provide a suitable environment for sub-national terrorism. But sub-national terrorism does not count as international terrorism, that has, per defintionem, to affect more than one country.17 While weak and failed states with their lack of territorial control make it easier for opposition movements or potential terrorist organisations to seize power. Groups that do not have the ability to control territory – as is the case in most countries in the Middle East – tend to terrorist strategies. But as long as these opposition groups maintain territorial areas of control they do not tend to terrorist attacks; they prefer what some analysts label guerilla warfare.18 Guerilla warfare is by no means less brutal than other forms of terrorism, the Lord's Resistance Army (LRA) in Uganda and the Revolutionary United Front (RUF) in Sierra Leone proved that their guerilla warfare is indeed yet another form of terrorism. Collapsed US Embassy Building in Nairobi, August 7, 1998. Collapsed US Embassy Building in Nairobi, August 7, 1998. The African Union's regional instrument to counter terrorism is the Algiers Convention on the Prevention and Combating of Terrorism established in 1999.19 It defines terrorism as a form of international crime: a result of the fact that Africa serves as a suitable and ideal environment to finance terror. African states realised back to two years before 9/11 that terrrorism exploits the differences in governance, porous borders, and illegal and informal trade networks.20 After the attacks on the Twin Towers and the Pentagon the United Nations Security Council adopted resolution 1373.21 This resolution was binding and called for the suppression of the recruitment, financing and supply of terrorist networks (although many African governments committed themselves to the war on terror, they lack the means to effectively do so). In the same resolution the United Nations Security Council was aware that one of the major problems is the connection between terrorism and international organised crime. This especially concerned Africa, where drugs and arms trafficking and informal economic structures are prelevant.22 Strategic Resources and International Terrorism Africa with its huge networks of informal economy is furthermore a suitable environment for terrorist groups to finance themselvs. There are rumours that Al-Qaeda profited from the informal economic structures in Africa. Although there is not yet enough evidence, many analysts think its plausible that Al-Qaeda was involved in the diamonds trade in Sierra Leone and in gems trafficking in Tanzania, thus prolonging tensions and conflicts.23 Some observers even argue that Al-Qaeda owned up to nearly 15 vessels for any kind of transport, using Somalia as an operational basis. Additionally there are also reports that Al-Qaeda was involved in Gold smuggling from Pakistan to Sudan.24 What makes Africa so attractive and vulnerable to terrorists and international crime is its resources. Especially in West Africa and in the Gulf of Guinea are vast amounts of oil. Gold, iron ore, bauxite, diamonds, and uranium attract not only big western companies but also illegal and informal entrepreneurs. In Central Africa gold, iron, oil, diamonds do the same; coltan is also available, which is especially important for those industries producing mobile phones and other electronic equipment.25 As the United States want to increase the African part of their oil supplies, more attention will be drawn to Nigeria, Chad, Congo (Brazzaville), Angola, Equatorial Guinea, Gabon and Sao Tomé e Principe.26 Some 25% of overall U.S. oil imports will come from Africa within the next four or five years.27 But the security sector in Africa is weak and on-shore as well as off-shore oil production is a very inviting target, especially in Nigeria. In the past mineral resources played a key role in financing civil war and different militias. Illegal diamond trade was a major source to finance the war between the Angolan government and the UNITA.28 The instability in the Democratic Reublic of Congo is largely due to the attractiveness of a vast amount of mineral resources in the region. Their illegal exploitation is a central way of financing for different milita groups in the whole country. One central precondition of illegal expoliatiation are porous borders. The smuggling of diamonds and other raw materials across the borders in central Africa is a key obstacle to freedom and peace in the region. As long as illegal trade is that simple providing stability in the region will be very difficult even for democratic states; and missions to provide stability in the region are designated to fail, as attacks on MONUC soldiers in the province of Ituri in early 2005 showed. It therefore must be of a key priority to Europeans and Americans alike to maintain more control over Africa's economy and to promote more border control by the African state authorities. A Change in Policies? After 9/11 the United States reviewed its foreign and development policy. One basic conclusion was that despite all international aid and financial injections most development countries in Africa simply did not experience development. The National Security Strategy set up in 2002 was the first attempt to counter that challenge. No development in development countries however did not suggest that development aid was futile, but rather that development aid had to be conducted in a different way. The new National Security Strategy marked the first time, when the United States began to take the threat of failed and weak states serious. The U.S. tried to tackle the issue and committed itself to more development aid but at the same time made it part of their National Security Agenda. Development policy since has a goal: Improving security for the United States and their allies. It was no longer a senseless expenditure to prove the selflessness of Western nations but was turned into an important mean of foreign and security affairs and thereby giving it a much higher priority in overall political affairs. However until now this change has only been rhetoric. State failure and state weakness in Africa is still a widespread problem. Somalia is an outstanding case in this regard. It experienced a military coup d’etat in the early postcolonial period, was an ally to both the Soviet Union and the United States, entered a bloody civil war, followed by international intervention and withdrawal and the secession of a major part of the country, of what is now called Somaliland. But renewed efforts by the African Union and the regional body, the Intergovernmental Authority on Development (IGAD) go without significant support of the United States. State failure is an imminent threat in other African countries as well, as in Nigeria and Eritrea.29 There is a whole volatile region from Liberia to Nigeria in the Gulf of Guinea where state failure is a common threat, thus preparing a potential breeding ground for terrorism in the medium future. But despite the rising significance of these regions for their natural resources initiatives to promote peace, stability and democracy have been limited. Although after 9/11 the United States released a new doctrine – the U.S. now considers Kenya, Nigeria, Sudan and Ethiopia as key countries of their interest in Africa – in the very same doctrine the United States stated that no U.S. troops will be dispatched to the African continent in peacekeeping missions.30 The same goes for the G8 countries: Although they have recognised that “Sustained and better co-ordinated support for the African Peace and Security Architecture and for post-conflict is required”31, they have not yet allocated the necessary financial support nor have they increased their diplomatic activity.

#### Terrorism causes extinction

Barrett et al 13—PhD in Engineering and Public Policy from Carnegie Mellon University, Fellow in the RAND Stanton Nuclear Security Fellows Program, and Director of Research at Global Catastrophic Risk Institute—AND Seth Baum, PhD in Geography from Pennsylvania State University, Research Scientist at the Blue Marble Space Institute of Science, and Executive Director of Global Catastrophic Risk Institute—AND Kelly Hostetler, BS in Political Science from Columbia and Research Assistant at Global Catastrophic Risk Institute (Anthony, 24 June 2013, “Analyzing and Reducing the Risks of Inadvertent Nuclear War Between the United States and Russia,” Science & Global Security: The Technical Basis for Arms Control, Disarmament, and Nonproliferation Initiatives, Volume 21, Issue 2, Taylor & Francis)

War involving significant fractions of the U.S. and Russian nuclear arsenals, which are by far the largest of any nations, could have globally catastrophic effects such as severely reducing food production for years, 1 potentially leading to collapse of modern civilization worldwide, and even the extinction of humanity. 2 Nuclear war between the United States and Russia could occur by various routes, including accidental or unauthorized launch; deliberate first attack by one nation; and inadvertent attack. In an accidental or unauthorized launch or detonation, system safeguards or procedures to maintain control over nuclear weapons fail in such a way that a nuclear weapon or missile launches or explodes without direction from leaders. In a deliberate first attack, the attacking nation decides to attack based on accurate information about the state of affairs. In an inadvertent attack, the attacking nation mistakenly concludes that it is under attack and launches nuclear weapons in what it believes is a counterattack. 3 (Brinkmanship strategies incorporate elements of all of the above, in that they involve intentional manipulation of risks from otherwise accidental or inadvertent launches. 4 ) Over the years, nuclear strategy was aimed primarily at minimizing risks of intentional attack through development of deterrence capabilities, and numerous measures also were taken to reduce probabilities of accidents, unauthorized attack, and inadvertent war. For purposes of deterrence, both U.S. and Soviet/Russian forces have maintained significant capabilities to have some forces survive a first attack by the other side and to launch a subsequent counter-attack. However, concerns about the extreme disruptions that a first attack would cause in the other side's forces and command-and-control capabilities led to both sides’ development of capabilities to detect a first attack and launch a counter-attack before suffering damage from the first attack. 5 Many people believe that with the end of the Cold War and with improved relations between the United States and Russia, the risk of East-West nuclear war was significantly reduced. 6 However, it also has been argued that inadvertent nuclear war between the United States and Russia has continued to present a substantial risk. 7 While the United States and Russia are not actively threatening each other with war, they have remained ready to launch nuclear missiles in response to indications of attack. 8 False indicators of nuclear attack could be caused in several ways. First, a wide range of events have already been mistakenly interpreted as indicators of attack, including weather phenomena, a faulty computer chip, wild animal activity, and control-room training tapes loaded at the wrong time. 9 Second, terrorist groups or other actors might cause attacks on either the United States or Russia that resemble some kind of nuclear attack by the other nation by actions such as exploding a stolen or improvised nuclear bomb, 10 especially if such an event occurs during a crisis between the United States and Russia. 11 A variety of nuclear terrorism scenarios are possible. 12 Al Qaeda has sought to obtain or construct nuclear weapons and to use them against the United States. 13 Other methods could involve attempts to circumvent nuclear weapon launch control safeguards or exploit holes in their security. 14 It has long been argued that the probability of inadvertent nuclear war is significantly higher during U.S.–Russian crisis conditions, 15 with the Cuban Missile Crisis being a prime historical example. It is possible that U.S.–Russian relations will significantly deteriorate in the future, increasing nuclear tensions. There are a variety of ways for a third party to raise tensions between the United States and Russia, making one or both nations more likely to misinterpret events as attacks. 16

### Warming

#### And industrial agriculture causes warming

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

Another threat from globalized industrial agriculture is the role it plays in the rapid advancement of climate change on the earth. In dozens of ways, from destruction of carbon-absorbing forests, to the massive over-use of fossil fuels for production and for transportation (upon which the entire model depends), climate change is directly furthered. One-eighth of the world oil supply is now used for transportation with a very high percentage of that being used for long distance shipment of food across oceans or continents. It has been widely quoted that the average plate of food on an American dinner table today has traveled more than 1,500 miles from source to plate. According to Edward Goldsmith, Europe’s leading ecological thinker, and publisher of The Ecologist, industrial agriculture bears overall responsibility for about 25 percent of the world’s carbon dioxide emissions, 60 percent of methane gas emissions, and 70-80 percent of nitrous oxide—all of them major greenhouse gasses contributing to climate change.7 Many climate scien- tists already predict hundreds more storms on the scale of Katrina or worse, and a rise in sea levels that could inundate thousands of miles of coastal farmlands in both North and South.

#### Warming is real, anthropogenic, and causes extinction

Richard Schiffman 9/27/13, environmental writer @ The Atlantic citing the Fifth Intergovernmental Panel on Climate Change, “What Leading Scientists Want You to Know About Today's Frightening Climate Report,” The Atlantic, http://www.theatlantic.com/technology/archive/2013/09/leading-scientists-weigh-in-on-the-mother-of-all-climate-reports/280045/

The polar icecaps are melting faster than we thought they would; seas are rising faster than we thought they would; extreme weather events are increasing. Have a nice day! That’s a less than scientifically rigorous summary of the findings of the Fifth Intergovernmental Panel on Climate Change (IPCC) report released this morning in Stockholm.¶ Appearing exhausted after a nearly two sleepless days fine-tuning the language of the report, co-chair Thomas Stocker called climate change “the greatest challenge of our time," adding that “each of the last three decades has been successively warmer than the past,” and that this trend is likely to continue into the foreseeable future.¶ Pledging further action to cut carbon dioxide (CO2) emissions, U.S. Secretary of State John Kerry said, "This isn’t a run of the mill report to be dumped in a filing cabinet. This isn’t a political document produced by politicians... It’s science."¶ And that science needs to be communicated to the public, loudly and clearly. I canvassed leading climate researchers for their take on the findings of the vastly influential IPCC report. What headline would they put on the news? What do they hope people hear about this report?¶ When I asked him for his headline, Michael Mann, the Director of the Earth Systems Science Center at Penn State (a former IPCC author himself) suggested: "Jury In: Climate Change Real, Caused by Us, and a Threat We Must Deal With."¶ Ted Scambos, a glaciologist and head scientist of the National Snow and Ice Data Center (NSIDC) based in Boulder would lead with: "IPCC 2013, Similar Forecasts, Better Certainty." While the report, which is issued every six to seven years, offers no radically new or alarming news, Scambos told me, it puts an exclamation point on what we already know, and refines our evolving understanding of global warming.¶ The IPCC, the indisputable rock star of UN documents, serves as the basis for global climate negotiations, like the ones that took place in Kyoto, Rio, and, more recently, Copenhagen. (The next big international climate meeting is scheduled for 2015 in Paris.) It is also arguably the most elaborately vetted and exhaustively researched scientific paper in existence. Founded in 1988 by the United Nations and the World Meteorological Organization, the IPCC represents the distilled wisdom of over 600 climate researchers in 32 countries on changes in the Earth’s atmosphere, ice and seas. It endeavors to answer the late New York mayor Ed Koch’s famous question “How am I doing?” for all of us. The answer, which won’t surprise anyone who has been following the climate change story, is not very well at all. ¶ It is now 95 percent likely that human spewed heat-trapping gases — rather than natural variability — are the main cause of climate change, according to today’s report. In 2007 the IPCC’s confidence level was 90 percent, and in 2001 it was 66 percent, and just over 50 percent in 1995. ¶ What’s more, things are getting worse more quickly than almost anyone thought would happen a few years back.¶ “If you look at the early IPCC predictions back from 1990 and what has taken place since, climate change is proceeding faster than we expected,” Mann told me by email. Mann helped develop the famous hockey-stick graph, which Al Gore used in his film “An Inconvenient Truth” to dramatize the sharp rise in temperatures in recent times. ¶ Mann cites the decline of Arctic sea ice to explain : “Given the current trajectory, we're on track for ice-free summer conditions in the Arctic in a matter of a decade or two... There is a similar story with the continental ice sheets, which are losing ice — and contributing to sea level rise — at a faster rate than the [earlier IPCC] models had predicted.”¶ But there is a lot that we still don’t understand. Reuters noted in a sneak preview of IPCC draft which was leaked in August that, while the broad global trends are clear, climate scientists were “finding it harder than expected to predict the impact in specific regions in coming decades.”¶ From year to year, the world’s hotspots are not consistent, but move erratically around the globe. The same has been true of heat waves, mega-storms and catastrophic floods, like the recent ones that ravaged the Colorado Front Range. There is broad agreement that climate change is increasing the severity of extreme weather events, but we’re not yet able to predict where and when these will show up. ¶ “It is like watching a pot boil,” Danish astrophysicist and climate scientist Peter Thejll told me. “We understand why it boils but cannot predict where the next bubble will be.”¶ There is also uncertainty about an apparent slowdown over the last decade in the rate of air temperature increase. While some critics claim that global warming has “stalled,” others point out that, when rising ocean temperatures are factored in, the Earth is actually gaining heat faster than previously anticipated.¶ “Temperatures measured over the short term are just one parameter,” said Dr Tim Barnett of the Scripps Institute of Oceanography in an interview. “There are far more critical things going on; the acidification of the ocean is happening a lot faster than anybody thought that it would, it’s sucking up more CO2, plankton, the basic food chain of the planet, are dying, it’s such a hugely important signal. Why aren’t people using that as a measure of what is going on?”¶ Barnett thinks that recent increases in volcanic activity, which spews smog-forming aerosols into the air that deflect solar radiation and cool the atmosphere, might help account for the temporary slowing of global temperature rise. But he says we shouldn’t let short term fluctuations cause us to lose sight of the big picture.¶ The dispute over temperatures underscores just how formidable the IPCC’s task of modeling the complexity of climate change is. Issued in three parts (the next two installments are due out in the spring), the full version of the IPCC will end up several times the length of Leo Tolstoy’s epic War and Peace. Yet every last word of the U.N. document needs to be signed off on by all of the nations on earth. ¶ “I do not know of any other area of any complexity and importance at all where there is unanimous agreement... and the statements so strong,” Mike MacCracken, Chief Scientist for Climate Change Programs, Climate Institute in Washington, D.C. told me in an email. “What IPCC has achieved is remarkable (and why it merited the Nobel Peace Prize granted in 2007).”¶ Not surprisingly, the IPCC’s conclusions tend to be “conservative by design,” Ken Caldeira, an atmospheric scientist with the Carnegie Institution’s Department of Global Ecology told me: “The IPCC is not supposed to represent the controversial forefront of climate science. It is supposed to represents what nearly all scientists agree on, and it does that quite effectively.”¶ Nevertheless, even these understated findings are inevitably controversial. Roger Pielke Jr., the Director of the Center for Science and Technology Policy Research at the University of Colorado, Boulder suggested a headline that focuses on the cat fight that today’s report is sure to revive: "Fresh Red Meat Offered Up in the Climate Debate, Activists and Skeptics Continue Fighting Over It." Pielke should know. A critic of Al Gore, who has called his own detractors "climate McCarthyists," Pielke has been a lightning rod for the political controversy which continues to swirl around the question of global warming, and what, if anything, we should do about it. ¶ The public’s skepticism of climate change took a dive after Hurricane Sandy. Fifty-four percent of Americans are now saying that the effects of global warming have already begun. But 41 percent surveyed in the same Gallup poll believe news about global warming is generally exaggerated, and there is a smaller but highly passionate minority that continues to believe the whole thing is a hoax. ¶ For most climate experts, however, the battle is long over — at least when it comes to the science. What remains in dispute is not whether climate change is happening, but how fast things are going to get worse.¶ There are some possibilities that are deliberately left out of the IPCC projections, because we simply don’t have enough data yet to model them. Jason Box, a visiting scholar at the Byrd Polar Research Center told me in an email interview that: “The scary elephant in the closet is terrestrial and oceanic methane release triggered by warming.” The IPCC projections don’t include the possibility — some scientists say likelihood — that huge quantities of methane (a greenhouse gas thirty times as potent as CO2) will eventually be released from thawing permafrost and undersea methane hydrate reserves. Box said that the threshhold “when humans lose control of potential management of the problem, may be sooner than expected.”¶ Box, whose work has been instrumental in documenting the rapid deterioration of the Greenland ice sheet, also believes that the latest IPCC predictions (of a maximum just under three foot ocean rise by the end of the century) may turn out to be wildly optimistic, if the Greenland ice sheet breaks up. “We are heading into uncharted territory” he said. “We are creating a different climate than the Earth has ever seen.” ¶ The head of the IPCC, Rajendra Pachauri, speaks for the scientific consensus when he says that time is fast running out to avoid the catastrophic collapse of the natural systems on which human life depends. What he recently told a group of climate scientist could be the most chilling headline of all for the U.N. report: ¶ "We have five minutes before midnight."

#### Warming kills agriculture which results in warfare and massive famines

Ginsborg et al. 12 – Mikkel Funder, Signe Marie Cold-Ravnkilde and Ida Peters Ginsborg - in collaboration with Nanna Callisen Bang, Denmark Institute for International Studies, 2012, "ADDRESSING CLIMATE CHANGE AND CONFLICT IN DEVELOPMENT COOPERATION EXPERIENCES FROM NATURAL RESOURCE MANAGEMENT" www.diis.dk/graphics/Publications/Reports2012/RP2012-04-Addressing-climate-change\_web.jpg.pdf

2.2 Climate change as a conﬂict multiplier¶ Climate change is therefore best seen as a conﬂict multiplier, rather than as a major direct cause of conﬂict in itself. Climate change may aggravate and extend the scope of existing conﬂicts, or trigger underlying and latent conﬂicts to break out into the open. ¶ Previous studies have identiﬁed a number of areas in which climate change may contribute to a worsening of conﬂicts (Brown & Crawford 2009). These include:¶ • Land and water access. Access and use rights to land are a key feature in most situations where climate change has contributed to natural resource conﬂicts so far. Climate change can intensify existing conﬂicts over land, as land becomes less fertile or is ﬂooded, or if existing resource sharing arrangements between diﬀerent users and land use practices are disrupted. In some parts of Africa, climate change may lead to a decline in available water resources of some 10–20% by the end of the century (op cit.). This may intensify existing competition for access to water at intra-state and/or subnational levels. • Food security. Reduced rainfall and rising sea levels may lead to a decline in agricultural production and a substantial loss of arable land in some parts of Africa. Reduced yields for own consumption and increasing domestic food prices may in some cases lead to civil unrest, and competition over access to land may intensify.¶ • Migration and displacement. In some cases, increased scarcity of and competition over access to water and arable land may contribute to internal or regional migration, and disasters such as ﬂoods may lead to temporary or long-term local displacement. This may in turn strengthen conﬂicts between host societies/communities and migrants looking for access to new land and resources. ¶ • Increasing inequality and injustice. Through processes such as the above, some population groups may be particularly hard hit, leading to increased inequality and a sense of injustice. This may intensify existing grievances and disputes between natural resource users and/or between resource users and outside actors such as governments – thereby increasing the risk and intensity of conﬂict.

### Solvency

#### Agriculture in Africa is weak – government funding is key

Kaplan 13 [(Marcus, Environmental Policy and Natural Resources Management; Chinwe Ifejika Speranza, PhD, Senior Research Scientist for the Center for Development and the Environment; and Imme Scholz, Deputy Director of the German Development Institute, Member of the advisory council of the Austrian Research Foundation for International Development, Member of the German Council for Sustainable Development) “Promoting Resilient Agriculture in Sub- Saharan Africa as a Major Priority in Climate-Change Adaptation” Part of the report “Trade and Environmental Review 2013” by United Nations Conference on Trade and Development. German Development Institute] AT

In addition to economic trends, such as greater international competition for land for various uses, fluctuating food prices, higher energy prices, and international trade policies, climate change seriously threatens the productivity of the agricultural sector and its contribution to economic and social development. The poorer people who depend directly on ecosystem services for their livelihoods are the most vulnerable to permanent changes in temperature and water availability, as well as to an overall higher variability in climatic patterns. They not only have less access to various types of resources, but they also have fewer opportunities for diversifying their livelihoods to include other income-generating activities in order to reduce their dependence on agriculture and other ecosystem services. One of the main reasons for the poor situation and the high vulnerability of farmers and agriculture in SSA is the long-term neglect of this sector by both national governments and the international donor community starting in the 1980s. Public spending on farming accounts for only 4 per cent of total government spending in SSA (World Bank, 2008), and the agricultural sector is taxed at a relatively high level. In addition, the share of the agricultural sector in official development assistance (ODA) declined from 18 per cent in 1979 to 3.5 per cent in 2004 (World Bank, 2008). Today, the importance of agriculture for economic growth has generally been recognized, and national, regional and international organizations are making greater efforts to support its development (Challinor et al., 2007; Hazell et al., 2007). In their Maputo Declaration of 2003, member countries of the African Union called upon African governments to increase investment in the agricultural sector to at least 10 per cent of their national budgets. However, most African countries are still far from reaching this target. Moreover, even though the sector is now receiving more attention, owing to the long period of neglect, the many challenges ahead will be difficult to overcome. Furthermore, most public transfers are largely aimed at mitigating climate change rather than supporting adaptation to its impacts: 79 per cent of dedicated multi- and bilateral funds were approved for mitigation projects (84 per cent if activities for reducing emissions from deforestation and forest degradation (REDD) are included), and only 14 per cent for adaptation 37 projects. Bilateral ODA shows a slightly different pattern, with 70 per cent approved for mitigation and 30 per cent for adaptation (UNER 2010). Moreover, most activities and funds focus on reducing emissions and increasing efficiency in the energy and transport sectors, while adaptation and mitigation in agriculture are still underfunded. Looking at bilateral ODA again, agriculture received only 1 per cent of all funds dedicated to mitigation, compared with 10 per cent for adaptation activities in 2009 (UNER 2010).

#### Thus the plan: The Republic of Kenya should enact policies to support a shift from industrialized to organic agriculture among small farmers within its territory.

#### That solves a shift to organics – empirically confirmed by Cuba

Mwaura 10 [(Michael, Jomo Kenyatta University of Agriculture and Technology) “Cuba: National policy for sustainable agriculture” Kenya for the People, Feb 6] AT

In the previous article, we took the position that sustainable agriculture was the way forward to help build vibrant rural economies. In this article, we will study Cuba as a success story in sustainable organic farming. This farming revolution was forced upon the Cuban people by their practice of agribusiness to serve an export market that collapsed after the Soviet Union withdraw support. This situation is eerily similar to what is being practiced in Kenya today by the growing of cash crops for export although not to such a grand scale. The article below has been gleaned from several sources. A brief history From 1492 to 1898, Cuba was a colony of Spain. Both the native people and the forest were annihilated to make way for large cattle and sugar farms in the hands of a few wealthy owners and worked by slaves. In 1898, the United States entered into the Spanish-American war, Spain was easily defeated, and Cuba was under US military rule from 1898 to 1902. Over the next few decades, U.S businesses and individuals acquired some of the best land and US marines were stationed in Cuba to protect US interests. Sugar production continued to increase in importance at the expense of food production, which caused greater reliance on food imports. Wealth was concentrated in a few hands, and the vast majority of Cubans continued to live in poverty without access to land or incomes sufficient to feed their families. On December 31, 1958, the Batista government was overthrown, and a socialist government took power. The expropriation of US property in Cuba led to a US policy of isolation. By 1960, the isolationist policies caused Fidel Castro to turn to the Soviet Bloc. By 1962, Cuba effectively was a Soviet satellite. Cuban agricultural policies followed the Soviet model—large monocultural state farms were highly mechanized and heavily reliant on chemical fertilizers and pesticides. The Soviet Union subsidized this industrial model by trading its oil, chemicals, and machinery for Cuban sugar at preferential rates. Then, in 1989, the Berlin Wall fell. Almost overnight $6 billion in Soviet subsidies to Cuba disappeared. At the same time, the US trade embargo tightened, and Cuba was plunged into an economic crisis that was further exacerbated by the United States passing the "Cuban Democracy Act," in 1992 which prohibited assistance to Cuba in the form of food, medicine, and medical supplies. State implemented reform Cuba radically changed the state sector in 1993; 80% of the farmland was then held by the state and over half was turned over to workers in the form of cooperatives-UBPC (Basic Unit of Cooperative Production). Farmers lease state land rent free in perpetuity, in exchange for meeting production quotas. A 1994 reform permitted farmers to sell their excess production at farmers' markets. The reforms emphasized five basic principles: • Focus on agro ecological technology: this was supported by the state/university research, education, and extensions system. • Land reform; state farms were transformed to cooperatives or broken into smaller private units, and anyone wishing to farm could do so rent free. • Fair prices to farmers: Farmers can sell their excess production at farmers' markets; average incomes of farmers are three times that of other workers in Cuba. • Emphasis on local production: Urban agriculture played a big part in this reform. More on this below. • Farmer-to-farmer training:this served as the backbone of the extension system. Urban Agriculture Another area in which an innovative approach has been applied is that of urban agriculture. The Cuban government promoted and nurtured the public enthusiasm for urban agriculture. It ruled that any unused city lot, even state-owned, could be taken over by citizens to grow food. Growers were permitted to sell their surpluses on the open market. Government programs were launched to help city folks learn to farm. Experts explained organic growing, composting, and natural pest control and water conservation. Shops were opened to sell seeds and supplies. An estimated 1,000 kiosks for fresh local produce were set up at farm gates and busy street corners throughout Havana. The popular gardens range in size from a few square meters to large plots of land which are cultivated by individuals or community groups. Production in other agricultural areas The reforms have not yielded dramatic results for sugar, meat, or dairy, nor for traditional import crops (rice and beans). Cuba continues to rely on food imports, as it has since it was colonized. Cuba buys rice from India and China, dairy products from the European Union, grains from South America and Eastern Europe, and meat from Canada and Brazil. Cuba has to buy these products from distant countries, adding on average 30% to the cost of food imports over what they would pay for US products. Effect on meat production Meat production and dairy production were hit particularly hard by the loss of subsidized Soviet feed and petroleum. The loss of petroleum meant that animal traction became a strategy to reduce reliance on farm machinery. Animal traction is also better for soil management, particularly given the smaller farm size after land was redistributed. However, the conversion to animal traction was impeded by lack of oxen and expertise. The solution was to prohibit slaughter of cattle without government permission (in order to build up the herd) and to create "schools" to train the oxen (and presumably farmers). Other government programs Social equity is a clearly a higher priority for the Cuban government than personal liberty. Despite being the second poorest country in the Americas, there is no widespread hunger; housing is generally free, if dilapidated and crowded; Cubans are one of the most educated populations in the world; and there is universal free health care. All Cubans have access to a basic (although minimal) diet through their ration card. Cubans supplement this with food they grow, barter for, or buy at farm stands, farmers' markets, or dollar stores. The Future It seems likely that Cuba will continue to promote agroecological practices and to expand urban agriculture simply because they are yielding results. The bad experiences with large agricultural operations, both before and after communism, make it unlikely that anyone could credibly promote a return to large, high-input operations as a matter of national policy. The positive results that farmers, university researchers, and extension are getting from the transformation of Cuban agriculture will likely encourage them to continue to pursue sustainable practices whatever comes next. Cuban people are eating better and healthier than before, though things are far from perfect. However, the relevant comparison is to other Latin American countries; Cuba simply does not have the widespread hunger, destitution, and suffering that are commonplace in countries with much higher GDP per capita. Conclusion There are many lessons we can learn from Cuba for Kenya: • The government giving citizens plots to farm on in urban areas could go a long way to alleviate hunger and stabilize our food supplies in the urban areas. • The food ration card to ensure all Kenyans get access to a basic diet is a positive. The government could contract local and rural farmers for this program. • A barter system, food for food or food for services by urban and rural farmers would be an idea worth researching and implementing. • The possible establishment of a sustainable agricultural department by the government to train urban and rural farmers in organic agriculture • Discounted availability of seeds and agricultural supplies would help potential urban and rural farmers.

#### More ev

Hoffmann 11 [(head of the Trade and Sustainable Development Section at the secretariat of the United Nations Conference on Trade and Development, member of the International Task Force on Harmonization and Equivalence in Organic Agriculture, editor in chief of UNCTAD's annual Trade and Environment Review) “ASSURING FOOD SECURITY IN DEVELOPING COUNTRIES UNDER THE CHALLENGES OF CLIMATE CHANGE: KEY TRADE AND DEVELOPMENT ISSUES OF A FUNDAMENTAL TRANSFORMATION OF AGRICULTURE” UN Conference on Trade and Development Discussion Paper No 201, Feb 2011] AT

First of all, it is important to remove or modify the existing tax and pricing policies that generate perverse incentives for sustainable production systems, such as overuse of pesticides, fertilizers, water, and fuel or encouraging land degradation. There should be a policy shift towards significantly increasing the efficiency of fertilizer and agro-chemical use and their replacement by soil-fertility-enriching (and carbon- absorptive) production methods that rely on multi-cropping, integrating crop and livestock production and the use of locally available bio-fertilizers and bio-pesticides. As most developing countries import all or the majority of the fertilizers and agro-chemicals used, a drastic reduction of their consumption therefore not only benefits the environment, but also leads to a reduction of the import bill and agricultural production costs.62 In India, for instance, overall public expenditures on agriculture have remained at approximately 11 per cent of agricultural GDP, while the share of subsidies for fertilizer, electricity and for price support of cereals and water has steadily risen at the expense of investments in public goods, such as research and development, irrigation, and rural roads (see below). Agricultural spending is about 4 times greater on subsidies than on such important public goods. In Zambia, only about 15 per cent of the 2003/2004 agricultural budget was spent on research, extension services, and rural infrastructure (World Bank, 2008: 115). Therefore, reallocating spending on private subsidies to public goods must be a central element of policy reform to encourage sustainable agricultural production. In addition to removing ‘perverse’ incentives, governments may also consider fiscal or market-based measures (e.g. GHG emission trading systems) to internalize GHG costs (for more information in this regard, see Kasterine and Vanzetti, 2010: 91–93). Second, assuring stability in land management and tenure systems is a very important policy issue. As the UN Special Rapporteur on the Right to Food put it “in a number of countries, the Green Revolution was effectively a substitute for agrarian reform: instead of encouraging increases in food production by redistributing land to the rural poor, it did so by technology” (De Schutter, 2009). In particular, small farmers need stable tenure systems to invest in soil fertility and production methods for regenerative agriculture.63 Agrarian reform should therefore continue to take centre stage on the political agenda of governments.64 This should include issues such as recognizing customary tenure, make lesser (oral) forms of evidence on land rights admissible, strengthen women’s land rights,65 allocate more land to smallholders with secured tenure, and establish decentralized land institutions (for more information, see World Bank, 2008: 139ff). Third, the share and effectiveness of public expenditures for agricultural development must be significantly increased. Public agricultural spending has been particularly lacklustre in agriculture-dominated developing countries (see table 2).66 Policymakers need to target investments carefully, putting resources into areas that have a large impact on improving physical and R&D infrastructure, linkages between farmers, and greater investment into extension education and services.67 While national-level investment in improving the transport and storage systems remains important, particular emphasis should be placed on developing locally shared infrastructure and improving value-added activities of farmers, to name but some key issues. Savings from the removal of perverse incentives can significantly reduce additional resource requirements in this regard. There could also be incentives in the form of (time-limited) land tax exemptions or lower cost credit to stimulate private investment. Such approaches are administratively simpler than subsidies and may not run afoul of WTO rules (Herren et al., 2011). According to the President of the International Fund for Agricultural Development (IFAD), “global food security can only be achieved through significant new investment in smallholder agriculture” (cited in Mactaggart, 2010b). Furthermore, governments need to pay special attention to strengthening the agricultural innovation and extension system for ecological farming methods 68, with particular emphasis on providing innovative, locally adapted and locally sourced solutions for smallholders.69 Paving the way for mainstreaming a mosaic of sustainable agricultural production methods requires integrative learning, in which farmers and researchers in agro-ecological sciences work together to determine how to best integrate traditional practices and new agro-ecological scientific discoveries. For this to take place, new channels and platforms for information exchange and skills’ transfer need to be developed (Herren et al., 2011). Enhanced regional and international South-South co-operation could play a useful role in strengthening agricultural R&D and extension capacity. The establishment of more regional centres of excellence, regional public research institutions and closer collaboration among existing research centres would be valuable steps in this direction (UNCTAD, 2010b).70 While public investment in agricultural research and development tripled in China and India in the 1980s and 1990s, it increased by barely a fifth in sub-Saharan Africa (declining in about half of these countries) (Pardey et al., 2006). With the exception of Brazil, India, West Asia and developed countries, the share of public R&D spending in agricultural GDP stagnated or even declined (see table 3).71 Fourth, agricultural policy is generally implemented by up to a dozen of governmental institutions. Achieving policy coherence and effective coordination of their activities are important for the paradigm shift towards regenerative agriculture as outlined above. Furthermore, coordination between environmental, natural resource, energy and agricultural policies is needed to maintain a consistent set of incentives for adoption of sustainable management systems and to facilitate cross-sectoral interactions, which are often involved in carbon crediting from agriculture. According to Stolze (2010), the creation of Support Platforms, which bring together potential public and private partners, supported by relevant experts, to jointly assess and further develop the priority activities identified may be worth considering. Fifth, regulations in the financial sector that facilitate the flow of funds for mitigation benefits to local communities are also important and have been a barrier to paying farmers for environmental benefits. Financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders’ ability to compete. Financial constraints originate from the lack of asset ownership to serve as collateral and the reticence to put assets at risk as collateral when they are vital to livelihoods. The demise of special credit lines to agriculture through public programmes or state banks has left huge gaps in financial services, still largely unfilled despite numerous institutional innovations (World Bank, 2008: 13). Therefore, special credit facilities (including micro-credit), community-oriented financial services, and the effective functioning of rural development banks are important in this regard. Another mechanism for facilitating access to financing for sustainable agricultural development is the broadening of payments for environmental services.72 Watershed and forest protection, for instance, create environmental services (clean drinking water, stable water flows to irrigation systems, carbon sequestration, and protection of biodiversity) for which providers should be compensated through payments from beneficiaries of these services. Interest in the widespread use of payments for environmental services has been growing, particularly in Latin America. In Nicaragua, for example, payments induced a reduction in the area of degraded pasture and annual crops by more than 50 per cent in favour of silvo-pastoralism, half of it by poor farmers (World Bank, 2008: 16). Sixth, small-scale farmers, their networks and sustainable production methods must again become an explicit component of national development strategies and an important target for development assistance (for more information, see Cook, 2009). Seventh, strengthening the performance of producer organizations and empowering the capacity of local communities should also figure prominently on the agenda of governments. Collective action by producer organizations is important for building research and skill capacity, reducing transaction costs, increasing market power, and strengthening representation in national and international policy forums. For smallholders, producer organizations are essential to achieve competitiveness (World Bank, 2008: 14). Strengthening the capacity of local communities in their stewardship of biodiversity, conservation of rangelands and fragile agro-ecological zones must be recognized as an essential strategy. Therefore, a policy framework around the stewardship of biodiversity at all levels needs to be created. Local communities can also play a very pro-active role in facilitating exchange of local knowledge, its blending with modern scientific tools and related dissemination through farmer-field schools, participatory plant breeding and community seed banks. Local communities can also be instrumental in promoting the de-centralized use of bio- and other renewable energy sources.73 Finally, agricultural mitigation and adaptation actions should be high priority candidates for being integrated into Sustainable Development Policy and Measures (SD-PAM), Nationally Appropriate Mitigation Actions (NAMAS), and National Adaptation Programmes of Action (NAPAs). According to Stolze (2010), priority should be given to adaptation measures that bring about mitigation consistent with sustainable development objectives. The integration of agricultural mitigation programmes into agricultural development strategies will need to be part of the overall effort to improve the sector’s performance and the livelihoods of small farmers (FAO, 2009a).74 The role of agriculture has to be closely interlinked with overall national development strategies (or plans) to bring about the structural transformation required for effective climate-change adaptation and mitigation.

## Specific FLs

### Yields---Top Level

#### 1. Our Andersson evidence cites studies that prove sustainable agricultures increases yields – prefer this since

#### It’s specific to Kenya

#### It cites similar successful projects in similar biophysical environments

#### 2. Also the second Andersson evidence says Kenyan farmers have adopted industrial techniques without industrial inputs because they can’t afford it – industrial ag might be useful in other context but it relies on heavy fertilizer and pesticide inputs to make it work which isn’t possible in the context of Kenya

#### 3. Literally zero link – all our evidence proves Kenyan farmers farm tea for industrial needs which obviously isn’t a vital commodity

#### 4. Agroecology establishes food security in Africa specifically—it boosts productivity by 116%.

Altieri 9—Professor of Agroecology at University of California, Berkeley [Miguel A. Altieri (Ph.D. in Entomology from the University of Florida), “Agroecology, Small Farms, and Food Sovereignty,” Monthly Review, 2009, Volume 61, Issue 03 (July-August), http://monthlyreview.org/2009/07/01/agroecology-small-farms-and-food-sovereignty]

Several reviews have amply documented that small farmers can produce much of the needed food for rural and neighboring urban communities in the midst of climate change and burgeoning energy costs.20 The evidence is conclusive: new agroecological approaches and technologies spearheaded by farmers, NGOs, and some local governments around the world are already making a sufficient contribution to food security at the household, national, and regional levels. A variety of agroecological and participatory approaches in many countries show very positive outcomes even under adverse environmental conditions. Potentials include: raising cereal yields from 50 to 200 percent, increasing stability of production through diversification, improving diets and income, and contributing to national food security (and even to exports) and conservation of the natural resource base and biodiversity. This evidence has been reinforced by a recent report of the United Nations Conference on Trade and Development stating that organic agriculture could boost African food security. Based on an analysis of 114 cases in Africa, the report revealed that a conversion of farms to organic or near-organic production methods increased agricultural productivity by 116 percent.

# Justice

## India 1AC

### Enviro

#### Advantage 1 is the environment

#### Industrial agriculture is a result of a model of production that prioritize crop production over environmental protection – this export-oriented model that is expanding in the status quo

Gonzalez 11 Associate Professor, Seattle University School of Law, ‘11

[Carmen G., “AN ENVIRONMENTAL JUSTICE CRITIQUE OF COMPARATIVE ADVANTAGE: INDIGENOUS PEOPLES, TRADE POLICY, AND THE MEXICAN NEOLIBERAL ECONOMIC REFORMS”, University of Pennsylvania Journal of International Law, 32 U. Pa. J. Int'l L. 723, Spring]

5.3. The Conflict between Agro-Export Specialization and Agro-Biodiversity¶ The theory of comparative advantage promotes economic specialization in goods that a country produces relatively more efficiently. For countries well-suited to agricultural production, the theory of comparative advantage would counsel specialization in several primary agricultural commodities and importation of manufactured goods. One of the lessons of the Mexican case study is that extending the principle of specialization from industry to agriculture is fundamentally inconsistent with the agrobiodiversity necessary to protect the integrity of the world's food supply. Cultivating different varieties of corn designed to resist different environmental conditions enables local farmers to diversify their risk in the event of crop failure. This genetic diversity is also essential to the world's plant breeders as they seek to develop new varieties to address the food security challenges of the 21st century, including climate change.The lessons of the Mexican case study are broadly applicable to other crops. One of the great risks posed to small farmers in developing countries and to the resilience of the world's food supply is the pressure to abandon traditional, biodiverse cultivation techniques in favor of uniform seeds, chemical fertilizers, and synthetic pesticides. Indeed, the U.N. Food and Agriculture Organization reports that seventy-five percent of the world's food crop diversity was lost in the 20th century. n222 Although thousands of food crops have been cultivated since the beginning of agriculture, four crops (corn, wheat, potato, and rice) currently supply sixty percent of the world's dietary energy from [\*769] plants. n223 Furthermore, the genetic base of these crops is alarmingly narrow. Genetically uniform, high-yielding varieties have displaced traditional varieties for 70 percent of the world's corn; 50 percent of the wheat in Asia, Africa, and Latin America; and 75 percent of Asian rice. n224 The replacement of biodiverse agroecosystems by monocultures is destroying the reservoir of genetic diversity necessary to enable local farmers and the global food supply to recover from serious environmental disturbances - including the floods, droughts, and other dislocations associated with climate change. n225 The cultivation of uniform crop varieties also increases vulnerability to pest and disease infestation (because different crops and different genetic strains of a particular crop may be more resistant to certain pests), depletes the soil of vital nutrients, requires the use of environmentally harmful chemical fertilizers and pesticides, and impairs human nutrition by reducing the varieties of foods consumed. n226 The expansion of export monocultures as a consequence of agro-export led development strategies promoted by the IMF and the World Bank has imposed severe environmental costs on a wide range of developing countries. These costs include deforestation, unsustainable uses of freshwater resources, agrochemical contamination of groundwater and surface waters, and greater pesticide-related illnesses. n227

#### This export-focused model prioritizes extraction of agricultural commodities over protection of the environment

Wilson 9 [(Adam, Human Resources Management) “Social and Ecological Implications of Sustainable Agriculture” The 9th International Students Summit on Food, Agriculture and Environment in the New Century] AT

Globalization and the industrialization of agriculture over the past half-century have changed the composition and nutritional value of food cultures around the world. Rather than seeking out new technologies in the form of genetically modified organisms to increase our food security we, as a global community, might assess our attitudes and relationships with ourselves, each other and nature, adjusting our behavior to lead more sustainable lifestyles. Community supported agriculture and sustainable agriculture are exemplary methods of how this can be accomplished. This paper will explore the different methods of sustainable, community supported agriculture that are currently being employed worldwide and how they can be put into practice at larger scales in order to mitigate human impact on the environment while providing necessary sustenance and basic human interactions. Artisanal forms of harvesting food are being abandoned in favor of corporately owned and operated methods of resource extraction that seek to maximize profit and yield at the expense of the environment. As a result consumers have become increasingly disconnected from the farmers, ranchers, and fishers who produce the food they eat. These changes however have given rise to global initiatives, such as the slow foods movement and community supported agriculture, which aim to increase the utilization of sustainable agricultural techniques and the reinstatement of local food systems. Small and large-scale implementation of sustainable, community-based agriculture is being conducted throughout the globe; from Cuba to Africa to East Lansing. Through the use of case studies and empirical evidence this paper will investigate how a shift from the current global-industrial model of agriculture to a locally-based sustainable model can increase food security and assist in alleviating pressures associated with environmental degradation and energy consumption. Sustainable agriculture, when applied in the context of local food systems, may diminish the amounts of environmental pollutants emitted without compromising the ability to produce suitable amounts of food. Furthermore, regionally grown and consumed foods are less susceptible to economic and climate variations than their industrial counterparts due to the decreased dependence on long-distance delivery systems. These types of systems also have the potential to bring communities closer and stimulate regional economies while preserving traditional food cultures.

#### Industrial agriculture threatens local cultures – agrobiodiversity is an important facet

Pant and Ramisch 10 [(Laxmi PhD candidate at the University of Guelph, research focuses on innovation systems in agriculture with field research; and Joshua, Associate Professor, School of International Development & Global Studies, University of Ottawa) “Beyond Biodiversity: Culture in Agricultural Biodiversity Conservation in the Himalayan Foothills” Beyond the Biophysical Pg 73-97] AT

Abstract This chapter explores the cultural dimensions of agricultural biodiversity conservation through a case study of the relationships between caste-based food traditions and local varieties of rice and finger millet managed by smallholder subsistence farmers in the Himalayan foothills of western Nepal. The empirical material for this study is derived from interviews with primary stakeholders, a household survey, and direct observation of cultural practices and spiritual traditions of rural farming communities. The different caste-based food traditions in the study area relate directly to differential use and appreciation of the local landraces of both crops, which are in turn conserved or managed to varying degrees. The empirical data provide strong evidence that agro-biodiversity management is not simply an agronomic or biogenetic issue, but that cultural preferences and practices are central to the creation, maintenance, and ultimate viability of biodiversity in agroecosystems. These findings suggest that future conservation efforts must engage local communities and their cultures fully in agro-biodiversity management, through participatory plant breeding, increased awareness and marketing of landrace identity within com- modity supply chains, and through advocacy on behalf of smallholders’ rights. Introduction Cultural diversity and agricultural biodiversity are inextricably linked. The ecologically complex settings that gave birth to major ancient civilizations are also the centers of domestication for the crops that are still globally important today (Rhoades and Nazarea 1998). Human cultures and plant populations have coevolved to the point that cultural knowledge about production, processing, and storage are now essential to the survival of both domesticated crops and humans (Nazarea-Sandoval 1992). Domesticated crops by definition reflect human agency, shaped by a legacy of preferences that have valued or discarded species or varieties not just for their nutritive value but also for their taste, color, symbolism, or other contributions to daily social and cultural lives (Zimmerer 1991). While conventional agricultural science has been interested in the raw genetic material held and managed by farmers all over the world, it has been much less appreciative or understanding of how local knowledge and cultural practices have created or sustained this landrace1 diversity (Nazarea 1995). Indeed, positivist science strives to identify and isolate universal scientific principles from cultural practices and spiritual traditions, downplaying relationships between culture and agriculture in general, and culture and agricultural biodiversity in particular. While this paradigm has certainly furthered human understanding and manipulation of simple systems, the generalizations of positivist science are much less useful for generating practical prescriptions for sustainably managing complex natural systems (Gadgil et al. 1993). This chapter uses case study material from the rice and finger millet food traditions of Nepal to argue that agricultural biodiversity management must necessarily engage with local cultural knowledge and practices. This research employs Cernea’s (2005, p. 75) concept of culture in agriculture as, “a cluster of fundamental building blocks of agricultural production processes, rural [economic, social, cultural and spiritual] life, and their actors, whose understanding is indispensable for grasping the deeper essence of agriculture.” Taking this recognition that “agro-biodiversity” is not a purely biological phenomenon, but rather one that is culturally constructed and relevant to given cultural (sub) groupings, will present scientists, farmers, and other land managers with opportunities for new approaches to biodiversity conservation. These include: (i) crop improvement research that integrates conventional and alternative scientific traditions, such as participatory plant breeding (PPB) (Morris and Bellon 2004); (ii) strategies to better identify, protect, and promote local landraces and genetic diversity through dedicated market supply chains or “slow food” movements (Jones et al. 2003); and (iii) lobbying for the customary rights and intellectual property rights (IPRs)2 of ethnic and rural farming communities (Escobar 1998). The chapter begins with a review of the “cultural” dimension of agro-biodiversity management. After a brief overview of international treaties on agricultural and human cultural diversity management, the limitations of contemporary practices for addressing the cultural dimension in agro-biodiversity conservation are identified before moving to the empirical section. Case study data show how food traditions in Nepal relate to and maintain the genetic diversity of both rice (a high-status, prestigious crop) and finger millet (a lower-status crop) despite the availability of modern high-yielding crop varieties. Conclusions are drawn, with a series of policy suggestions for successful management of agricultural biodiversity and human cultural diversity. Culture in Agro-biodiversity Management The attributes of agro-biodiversity can be described at the genetic, species, and agroecosystem levels (IPGRI 2004). The genetic diversity of a crop manifests itself in variations such as plant height, spike length, and grain color of individuals within that species. A given population will therefore be heterogeneous with regard to these traits, which will be inherited by predictable proportions of the population as a whole and available for passing on to successive generations. At the agroecosystem level, agro-biodiversity encompasses not only the abundance and diversity of species – i.e. plants (crops, weeds, trees, etc.), humans, and nonhuman animals – but also the biophysical variations, such as upland and lowland conditions, irrigated and rain-fed, and arable farming and perennial vegetation. This agro-biological diversity interacts strongly with culture: culture shapes the environment and the environment in turn shapes cultural preferences. Biological diversity (from the genetic through to the landscape level) is directly affected and moulded by farmers’ practices and circumstances. At the same time, biological diversity constrains or facilitates the opportunities available to rural elements of society, from individual or household livelihoods through to wider communities or national economies. Because many of the planet’s areas with the highest biological diversity are inhabited by indigenous and traditional peoples, the 1988 Declaration of Belém by the International Congress of Ethnobiology claims an “inextricable link” between biological and cultural diversity. The term “biocultural diversity” has also been proposed to describe this intimate interrelationship (Posey 1999a), although it has been challenged as a term that does not reflect precisely on the nature of that relationship, and for seemingly privileging the analysis of “exotic” or isolated communities (Cocks 2006). Critics of agricultural modernization would argue more generally that trends towards industrial agriculture and monocultures of hybrid, “improved” crop varieties threaten not only the cultural and livelihood diversity of rural peoples but also the genetic, agro-biodiversity that has supported those societies (Shiva 1997; Altieri 1987).

#### This cultural destruction is a manifestation of colonial structures of power – only revitalization of indigenous knowledge production can dismantle destructive ideologies

Kortright 3 [(Chris, Sessional Lecturer and Adjunct Professor of Anthropology, University of California) “Colonization and Identity” The Anarchist Library Jan 1] AT

Colonization and Identity Those who discovered and conquered other lands were entitled to them, their riches, and their spoils. The conquered people could be treated as slaves, banished to other lands, or assimilated into the society and institutions of the conquering people — Vine Deloria, Jr. (1983) The present global stratification and make-up has been dictated in totality by the colonization and conquest of European nations. Although direct colonialism has largely ended, we can see that the ideology of colonialism has lingered in the identity of people within the general cultural sphere as well as the institutions of political, economic, and social practices. Colonization or the “colonial complex” is: (1) colonization begins with a forced, involuntary entry; (2) the colonizing power alters basically or destroy[ing]s the indigenous culture; (3) members of the colonized group tends to be governed by representatives of the dominate group; and (4) the system of dominant-subordinate relationship is buttressed by a racist ideology. (Marger, 2000:132) This process has created the identities of both the colonized and the colonizer with pathological effects. It has destroyed both the lives and the cultures of the colonized and implanted a culture of destruction upon all inhabitants, both the colonized and the colonizer. There are two reasons for exploring the pathology of colonization. First we must understand the creation of the present social, political and economic dichotomy we face, but more importantly we must understand the psychological problems created by colonization, so we as humans can deconstruct the present Leviathan we live in and create a world based on cultural diversity, liberty, and mutual aid. The Nature of Colonization — Empires, Land, and Cultures The Ideology of Colonization Colonization is based on the doctrine of cultural hierarchy and supremacy. The theory of colonialism is the domination by a metropolitan center which rules a distant territory through the implanting of settlements. It is the establishment and control of a territory, for an extended period of time, by a sovereign power over a subordinate and “other” people which are segregated and separated from the ruling power. Features of the colonial situation include political and legal domination over the “other” society, relations of economic and political dependance, and institutionalized racial and cultural inequalities. To impose their dominance physical force through raids, expropriation of labor and resources, imprisonment, and objective murders; enslavement of both the indigenous people and their land is the primary objective of colonization. Another technique used to subdue the native population is the sacking of cultural patterns; these cultural values are stripped, crushed and emptied. The colonialists see their culture as a superior culture; usually tied to either Cultural Evolutionary or Social Darwinist theories. In an attempt to control, reap economic benefits, and “civilize” the indigenous peoples the colonialist dismantles the native cultures by imposing their own. There is a destruction of the cultural values and ways of life. Languages, dress, techniques are defined and constructed through the ideology and values of the colonialist. Setting up the colonial system does not destroy the native culture in itself; the culture once fluid, alive and open to the future becomes classified, defined and confined through the interpretation, imposed oppression, and values of the colonialist system. At this point the native culture turns against its members and is used to devalue and define the identity of the native population. Their constant and very justified ambition is to escape from their colonized condition, an additional burden in an already oppressive status. To that end, they endeavor to resemble the colonizer in the frank hope that he may cease to consider them different from him. Hence their efforts to forget the past, to change collective habits, and their enthusiastic adoption of Western language, culture and customs. (Memmi, 1965:15) The Question of Land and Resources Human History is rooted in the earth, everything is centered around or is connected to our use of land and territory. This has meant that much of human activities has revolved around the territory they live in and extract resources from. This has lead some cultures to desire more land and obtain new territory; therefore they must deal with the indigenous peoples of that land. At a very basic level colonialism is the desire for, settling on, and controlling of land that a culture does not posses; land that is lived on an owned by other people. Edward Said points out the rate at which Europe acquired lands at the end of their colonial reign. Consider that in 1800 Western powers claimed 55 percent but actually held approximately 35 percent of the earth’s surface, and that by 1878 the proportion was 67 percent, a rate of 83,000 square miles per year. By 1914, the annual rate had risen to an astonishing 240,000 square miles, and Europe held a grand total of roughly 85 percent of the earth as colonies, protectorates, dependencies, dominions, and commonwealths. (Said, 1993:8) It was not only the acquisition of land that drove colonialism, but there was also a desire for natural resources and labor. The colonialist countries needed raw materials to support their growing economies. Places such as the Americas and Africa offered natural resources they could utilize for manufacturing — as well as opened up new markets to sell their goods. Political structures of the colonial countries both economically and militaristically backed the establishment and maintenance of the colonies, but it can not be ignored that a high percentage of the funding for the colonies were provided by emerging capitalists; the Europeans extended their power by promoting merchant houses and chartered companies. In settler colonies like Kenya and Mozambique, there was a plantation-based export-commodity production of products like cotton, tea, coffee and sugar. Places like South Africa and Zaire were exploited for their gold and diamond mines. For the economies of the colonialist states the resources were harvested by the native populations (either through direct slavey or extreme wage-slavery). Colonial Identity “The colonial situation manufactures colonialists, just as it manufactures the colonized (Memmi, 1965:56).” If we are to look at how colonization created the identities of both the colonized and the colonizer, we must recognize that historical situations are created by people, but people are in turn created by these situations. The way a person sees the world, both geographically and culturally, is dictated by their abstract understanding of the world. Although culture does exist as a tangible entity, it is the abstract ideologies of comparison between cultures that create cultural identities situated in social, economic, and political hierarchies. It is in this abstract world of ideas that the colonizer, by creating the “other” which was to be colonized, created his own identity in opposition to that of the colonized. (Said, 2000:71–74) The Colonizer The Colonialist that accepts The colonist who was either born in the colony or traveled there to better himself economically (often those who traveled and established themselves in a colony were from poor or working class backgrounds; only in the colony did they have a chance to make something of themselves) and embraces the colonial structure in which he was, in his eyes, entitled to was obviously the majority of the colonists. By accepting the role of the colonizer, he accepted the responsibility and identity of both himself and the colonized. Although the colonized are an interracial and necessary economic part of the colony, the colonizer must disown the colonized and defend his identity both intellectually and physically. He must accept the violence and poverty he sees daily; it is his job to rationalize the actions of himself and fellow colonialists because he needs to absolve himself of the atrocities committed in the name of economic and cultural superiority. This man, perhaps a warm friend and affectionate father, who in his native country (by his social condition, his family environment, his natural friendships) could have been a democrat, will surely be transformed into a conservative, reactionary, or even colonial fascist. He cannot help but approve discrimination and codification of injustice, he will be delighted at police tortures and, if the necessity arises, will become convinced of the necessity of massacres. (Memmi, 1965:55–56) The contradiction of his lifestyle, even with the economic benefits and cultural justifications, takes a tool on his psyche. Deep down inside himself he lives with the knowledge of his actions, and no matter how much he justifies or rationalizes his behavior the colonist pleads guilty. But a person cannot live with such contradictions, and thus the colonist creates an identity to defend his actions. It is at this point that he creates the image of the colonist as a humanitarian, who just happens to gain economic benefit. In his eyes he is bringing “civilization” to the “savages.” As Social Evolutionary Theory teaches the colonialist; all cultures evolve into centralized industrial nations. He is helping these “backward’ countries reach their evolutionary goal. He is bringing high civilization to them, and yes there is some hardship, but evolution is rough; if the natives would just stop resisting this natural process and abandon their traditional ways, they could learn to live the right way. The Colonialist that Resists At the core of the colonizer is his privilege, some individuals born or traveled to the colonies felt overt guilt for this privilege. At first they deny such privilege, but when it is in their face daily it can no longer be ignored; at this point they try to resist, but to do so would be to give up their privilege. He finds himself on the other side of the scale from the colonized. If his living standards are high, it is only because the colonized live in poverty. He has positions of authority because these positions are reserved for him. To refuse means to either withdraw physically from the colonial condition or remain there and fight to change them. The choice to stay and fight puts the colonizer into a life of contradiction; he is now at odds with his country men, and cannot easily escape mentally from the concrete situations and ideology that make up the actual relationships of the colony. This contradiction deprives him of all coherence and tranquillity of his identity. He finds that it is one thing to refuse colonization, but it is quite another to accept the colonized and be accepted by them because who can completely rid themselves of bigotry in a country and system founded on such a principle. No matter how genuine he is, there remains a fundamental difference between himself and the colonized. “In other words, either he no longer recognizes the colonized, or he no longer recognizes himself (Memmi, 1965:32).” In resisting he is aiding the birth of a social order which may not have room for him. He dreams of a new social order were the colonized stop being colonized, but he does not see a transformation of his own situation and identity. In the new harmonious social order he will continue being who he is, with his language intact and his cultural traditions dominating because though he hates the oppression of colonization he too buys the theories of Social Evolution. In other words, he hopes to continue his identity within the abstract concepts of the dominate culture with a situation where the dominate culture would not exist. He calls for a revolution, but refuses to conceive that this revolution would result in the overthrow of his situation and identity. It is hard to imagine or visualize one’s own end, even if it’s to be reborn as another; especially if like the colonized, one can hardly evaluate such a rebirth. The Colonized Images and Myths of the Colonized To justify the colonization of a people, images need to be created so that the subjugation makes sense. These images become the identity of the colonized. There are many images used, but one universal image that has been put on native people is laziness. This image is a good example of how the colonizer justifies his actions. This image becomes the excuse for the colonial situation because without such images the actions of the colonialist would appear shocking. The image of the lazy native is a useful myth on many levels; it raises the colonizer and humbles the colonized. It becomes a beautiful justification for the colonizer’s privilege. The image is that the colonized are unbearably lazy; in contrast the colonizer is always in action. It implies that the employment of the colonized is not very profitable, therefore justifying the unbearable wages paid to them. The logical assertion would be that colonization would profit more by employing experienced workers, but this is not the case. The qualified worker, then comes from the colonizer’s class; they then earn three to four times that of the colonized. It is more profitable to use the labor of three of the colonized and pay them less than what would be paid to one colonialist. Therefore the colonialist becomes the specialist, and the colonized become the laborers. Dependancy Complex of the Colonized Dependancy Theory is when the colonizing states exploit their colonizing regions that enhance their own development and accumulation of capital. When wealth and resources are extracted from the colony, colonist stunts the development or undo past development. This lack of development or modernization is placed on the colonized as their failure to be able to compete with the colonial state. What development that does occur is then distorted by a dependancy relationship and creates both internal and external problems to the local communities, thus creating an image of inadequacy upon the colonized. The colonial states manipulate the industrialization process in order to increase their profits, by undermining the local autonomy of the native population. Often they control supplies and resources available to the colonized community, forcing them to produce cash-crops instead of food, then sell food at an inflated price to the native population. This not only makes the colonized dependent psychologically, but also dependent on the colonial system for basic resources. If one adds that many Europeans go to the colonies because it is possible for them to grow rich quickly there, that with rare exceptions the colonial is a merchant, or rather a trafficker, one will have grasped the psychology of the man who arouses in the autochthonous population “the feeling of inferiority.” (Fanon, 1967:108) Colonial Conflict/Relationship The image of the settler and native village, although a physical reality of habitation; there is a psychological distinction between the two, and when we see this physical and mental connection, there is an understanding of identity. The colonial world is really a Manichean world, there is that of the native village and that of the settler’s village. Between these two worlds are the policeman and the soldier, they are the true officials and liaisons of the colonial system. The dividing lines between these two separate worlds are the barricades, barbed wire and police stations. The Settler Village The settler town is strong; it is made of stone and steel, and the streets are covered in asphalt. The town is brightly lit. The streets are clean and the people are clean. They are all well clothed and well feed. Education is a given in this world. “The settler’s town is well-fed town, an easygoing town; its belly is always full of good things. The settlers’ town is a town of white people, of foreigners. (Fanon, 1963:39) The Native Village The native village, otherwise known as the shanty-town, getto, or reservation, is an infamous place throughout the colony. The colonized are born there, and die there with no notice or thought given to them. It is rarely open, the space is cramped and stifling (both mentally and physically.) The people live on top of each other, hungry, malnourished, barely clothed. There are next to no streetlights and darkness is not only a physical but psychological reality. The walls that are built to keep the natives out of the settler town, in fact keep them in the squaller of the native town. There is no way out of this village. The barbed wire and lack of education, hand in hand with skin color, makes sure the doors are closed and the colonized stay in their village. “The native town is a crouching village, a town on its knees, a town wallowing in the mire.” (Fanon, 1963:39) Freedom from Despotism “The crux of the matter rests, not merely in the resistance to the predatory nature of the present Eurocentric status quo, but in conceiving viable sociocultural alternatives (Churchill, 1996:31).” Decolonization Most decolonization theory is solely focused on the decolonization of the colonized. There is a necessary reason for this. The issue of colonization and the atrocities committed by the colonists towards the colonized is no less than cultural and physical genocide, but as Frantz Fanon discusses in The Wrenched of the Earth, there is no way to return to a pristine/pre-colonial time, so the only way to change the stratification of the post-colonial world is through decolonization. But this decolonization cannot just be of the colonized, this process must be also of the colonizer. White people need to deconstruct their culture and ideologies because the stratification is founded and maintained in our hegemony in regards of this culture of colonization. The new relationships are not the result of one barbarism replacing another barbarism, of one crushing of man replacing another crushing of man. What we Algerians want is to discover the man behind the colonizer; this man who is both the organizer and the victim of a system that has chocked him and and reduced him to silence. As for us, we have long sense rehabilitated the Algerian colonized man. We have wrenched the Algerian man from a centuries-old and implacable oppression. We have risen to our feet and we are now moving forward. Who can settle us back in servitude? (Fanon, 1965:32) Cultural Revitalization The key to decolonization is a conscious act of cultural revitalization. There needs to be a rebirth of cultures dismantled during colonialism. The cultures of colonized and traditional people need to teach this culture lessons of the past. In this I don’t mean teach the Eurocentric power structure the mistakes of their past, but the teaching of traditional knowledge, values and lifestyles. This also means returning stolen lands and creating relations that are not based on white privilege. In a very real sense, we need to overthrow our own existence to be reborn, in the sense that Memmi speaks of. “Only in that way can we transcend the half millennium of culture shock brought about by the confrontation with Western civilization. When we leave the culture shock behind we will be masters of our own fate again and be able to determine for ourselves what kind of lives we will lead.” (Deloria, 1999:153) With understanding of political, economic and cultural knowledge of traditional culture, white people can break away from the pathology created with colonization and live in a culturally diverse society; one in which we live under a new cultural understanding in solidarity with those living within their traditional cultural ways. “I may say that I believe such an agenda, which I call ‘indigents,’ can and will attract real friends, real allies, and offer real alternatives to both marxism and capitalism. What will result, in my view, is the emergence of a movement predicated on the principles of what are termed ‘deep ecology,’ ‘soft-path technology,’ ‘anarchism,’ and global ‘balkanization.’” (Churchill, 1996:480) This traditional knowledge offers us a way out of the stratification and poverty, both economically and psychological, that we face to day. It is a starting point to destroying the structures established by colonial ideologies, and creating a society based on equality, liberty, and mutual aid.

### Poverty

#### Industrialized agriculture causes devastating famines and destruction of farmers’ livelihoods – the question is not one of yields, but allocation – while the developed world faces food oversupply, millions of Indians starve to death

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

5. Globalisation and the creation of hunger Agribusiness is harvesting both the stocks and agricultural subsidies to gain through agricultural exports. The same companies that gained through deregulated imports are now also gaining through deregulated exports. Millions of Indians go to bed hungry, as the government has dismantled the PDS system, and taken affordable food out of the reach of millions. Foodgrain export is liberalisation’s answer to the problem of ‘‘over-procurement’’ from farmers while it will bring in much needed foreign exchange. However, ever since Indian agriculture was subjected to liberalisation, both the share of agriculture exports in India’s total exports as well as their value in hard cash has actually declined. The share of agricultural exports in India’s total exports declined from 20.33% in 1996–1997 to 18.25% in 1998–1999 and further to 14.04% in 2001–2002 (Table 1). 5.1. Foodgrain exports did not benefit the national exchequer Each period of large exports has been followed by acute food shortage, and India has had to import the same grain again, often at higher prices. For instance, India exported 2.5 lakh tonnes of wheat during 1987–1988, followed by an import of 18 lakh tonnes in 1988–1989 [17]. 5.2. Foodgrain exports did not benefit the farmer Wheat exports had an inflationary impact on domestic prices, although this did not benefit the farmers, as during the harvesting period the prices are kept low, and even MSP rates are not enforced. 5.3. Foodgrain exports: Redirecting subsidies from farmers to traders The push towards exports is neither aimed at helping farmers or the nation’s finances; rather, in accordance with the impetus of WTO’s Agreement on Agri- culture, it is a way of diverting support away from farmers towards traders. While the government dismantles procurement and public food distribution because they are considered subsidies to the people of the country, and are supposed to distort trade, it allows traders to buy bulk grains from its go downs at prices even lower than those offered to the poorest of the poor. Moreover, the annual budgets since liberalization having been adding to the subsidies for the corporate sector–tax holi- days for building silos and cold storages, incentives for exporting, subsidized trans- portation to the ports of the traders’ choice. The experience of the 2001 wheat export, for instance, reveals this. As against an economic cost of Rs 8300 per tonne to the FCI and an open market price of Rs 7000 per tonne, India was offered a price of Rs 4300 per tonne in international market in May 2001. The government allowed FCI to charge any price for exports, as long as it is not below the below poverty line’ (BPL) rate. In this scenario, Cargill has emerged as the biggest buyer of subsidised wheat being pushed by India into world markets [17]. The offtake price of wheat for export has also been allowed to far below the BPL price of Rs. 4150 per tonne, to Rs. 3960 per tonne. At the same time, it has increased the above poverty line’ (APL) issue prices of wheat to Rs. 610 per quin- tal, and for rice to Rs. 830 per quintal. This price increase will only ensure that PDS offtake will be even lower, so that buffer stocks for exports will be maintained [17]. Globalisation, as directed by the World Bank/IMF structural adjustment programmes and the WTO has seen a return of famine. The intensification of hunger over the last five years, even while grains are overflowing from the godowns can thus not be attributed to drought and climatic conditions alone, but to the policies that govern people’s access to food. The policy changes have consistently attempted to decrease the government’s role in ensuring food security and livelihood security for farmers in particular by calling measures meant to aid people as ‘trade distorting’ and demanding that these be scrapped. The anomaly of the co-existence of burgeoning food stocks and mass starvation is today, as in the late 19th century, the direct consequence of trade-driven agricultural policies. The 1877 Deccan famine killed over a million people; the trade liberalisation of the last decade of the 1990s has seen India step into the new millennium with over 50 million starving people and millions more with drastically decreasing access to food.1 An obvious example of the policy shift from people centred concerns to trade- and corporation-centred concerns is the fact that while farmers are not allowed by law to take their produce beyond their state borders, traders can pick them up any- where and take them anywhere. In fact, the government is building super high- ways, after forcibly taking away land from farmers and communities to connect centres of agricultural production to airports and ports, so that corporations can quickly transport these commodities for export. The policy changes induced by trade liberalisation include: dismantling the Food Corporation of India (FCI) and reduce its role in procure- ment from farmers; . removal of QRs on imports of food and agricultural products; . the amendment of the Public Distribution System, to cater only to the BPL cate- gory of the population; . increase in the central issue price, from Rs. 450/quintal in April 1995, to Rs. 682 quintal in April 1999, and to Rs. 900/quintal in 2000; and . increased price of food available through the targeted PDS to the BPL as a result of transferring 50% of the procurement and distribution costs of the government to this category. These changed policies have had disastrous impacts for both farmers and con- sumers. 5.3.1. Farmers . Government procurement centres refusing to purchase foodgrains from farmers. . The refusal of the government to enforce MSP on private traders and corpora- tions, forcing farmers into distress sale of foodgrains at far below production costs. . Dumping of cheap, subsidised agricultural products by other countries in the Indian market [5]. . Increasing price of farm inputs, including seeds [14]. . Liberalising seed regulations to allow private seed companies sell uncertified seed [11]. . Deepening of farmers’ debt, increased mortgages and land alienation, increased destitution, suicides and sale of body parts among farmers. The prosperity that globalisation was suppose to spread is fast proving to be elusive. Trade liberalisation and globalisation has resulted in thousands of farmers sacrificing their lives and livelihoods. In fact, the most prosperous state, also called the breadbasket of India, Punjab, has left behind Andhra Pradesh in the notorious distinction of farmers’ suicides [14]. 5.3.2. Consumers . Massive reduction in the number of people accessing food from the targeted PDS due to the inability of the government to identify the BPL category of people. . Inability of the majority of even the few BPL identified to purchase food-grain from Fair Price Shops due to increased prices. . Drastic increase in food prices—by over 60% since the initiation of trade liberal- isation measures, and over 200% in commodities like pulses.2 Reduced PDS off- take by states due to increased issue prices. The shift from PDS for all to Targeted PDS was justified on grounds of reducing government expenditure. However, with trade liberalisation, the PDS costs to government have risen from Rs. 5,166 crores in the mid 1990s to Rs. 9300 in 1999– 2000.3 While the government blames farmers for this increased expenditure, the primary reason is the increased cost of food to consumers as a result of policy changes, resulting in a drastic decline in purchases from the Fair Price Shops. 5.4. Declining food production Export-oriented agricultural policies that push the small farmer to destitution on the one hand, and promote cash cropping on the other, have resulted in a steady decline in food production since the early 1990s. The collapse of domestic support for food production (through dismantling the MSP, rising costs of inputs, crop failure due to uncertified seeds) in the late 1990s has intensified this shift, as farm- ers are desperate to recover their losses. For instance, there has been a decline in food production to the order of 12.8% in just one year, 2000–2001 [7]. 5.5. Declining food consumption A major impact of trade liberalisation policies has been a general lowering of food consumption. The per capita cereal consumption has declined from 17 kg per capita per month in the 1950s to 13.5 kg per capita per month in the 1990s [5]. The National Nutrition Monitoring Bureau 1997 data shows a declining trend in consumption in rural India, particularly in cereal and millets, the main source of energy for the poor, from 1990–1995. The National Sample Survey (NSS) rounds starting from the 38th round have documented the decline in cereal consumption 1992, following the implementation of SAPs.4 The most important reasons for the decline are: rising food prices, destruction of livelihoods, destruction of the PDS system and shift to export oriented crops. The reduced consumption on the one hand, and decline in production and pro- curement on the other are directly linked though the food and agricultural policies of the government. Colonialism had destroyed the food sovereignty of the country, forcing changes in cropping from food for local and regional food security to commercial crops. Rice particularly had become a commercial crop even within the country. The emphasis on foreign trade had resulted in large scale famines in the country, forc- ing Cornelius Walford to comment in 1879 in The Famines of the World—‘‘it is an anomaly that, with her famines on hand, India is able to supply food for other parts of the world’’ [5]. Following independence, the Government’s priority was to ensure that farmers would produce food and thus government procurement (to ensure both that farm- ers produced food, and got just price for it) and the public distribution system (to ensure that consumers got adequate food at affordable prices) were designed. The need for government involvement in food production and distribution became even more necessary with the Green Revolution that firstly, destroyed regional food security based on diverse cereals and replaced it with just wheat and rice; secondly, concentrated the production of these cereals in just two states—Punjab and Haryana—and thirdly, forced the farmer into the vicious treadmill of costly input (seeds, chemicals water) intensive agriculture.

#### The best empirics confirm that it causes massive poverty and starvation

Gonzalez 7 [(Carmen, Fulbright Scholar in Argentina, a Visiting Fellow at Cambridge University in the United Kingdom, a Visiting Professor at the Hopkins-Nanjing Center in Nanjing, China, Chair of the Environmental Law Section of the Association of American Law Schools) “Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens” A Center for Progressive ReformWhite Paper April 2007] AT

The Green Revolution was an immense success from the standpoint of food production,76 but it exacerbated hunger in the developing world by aggravating poverty and inequality.77 First, the Green Revolution was inherently biased against poor farmers in developing countries because the new seeds only produced high yields in response to the application of expensive inputs unaffordable to many farmers, including synthetic fertilizers, chemical pesticides, and irrigation systems.78 Second, the increase in food production resulting from the Green Revolution depressed agricultural prices, and thus deprived small farmers in developing countries of the cash income necessary to purchase agricultural inputs, pay taxes, and purchase goods not produced on the farm.79 Many small farmers abandoned the land, and rural poverty and hunger increased.80 Indeed, one review of over 300 published reports on the Green Revolution concluded that 80 percent of these reports found that the Green Revolution aggravated rural poverty and inequality in developing countries.81 Third, the Green Revolution’s emphasis on increasing food production was often promoted as an alternative to land reform and other redistributive measures82 – the very reforms that have been credited in subsequent studies with poverty alleviation, rural development, and enhanced food security in the developing world.83 The pauperization of small farmers in the developing world was exacerbated by United States Public Law 480 (the so-called “Food for Peace Program”),84 which depressed agricultural prices in developing countries by making U.S. surplus agricultural production available to developing countries at reduced prices or free of charge as food aid.85 Furthermore, farmers in the developing world were harmed by the lavish agricultural subsidies maintained by the United States and other industrialized countries (which placed additional downward pressure on world agricultural commodity prices) and by the tariff and non-tariff import barriers that impeded developing country farmers from obtaining access to developed country markets.86 In sum, the Green Revolution, Public Law 480, and the subsidies and import barriers maintained by the United States and other industrialized countries increased hunger in the developing world by depressing food prices, rendering small farmers destitute, and depriving developing countries of badly needed export earnings.87

#### Billions are dying in what can only be described as a global apartheid. The fact that this is a direct result of Western imperial policies creates a moral obligation to correct global injustice even absent a framework.

Ruz 2000 [(Dr. Fidel Ruz, President of the Council of State and Council of Ministers of the Republic of Cuba) “Global Economic Apartheid” Speech given at the International Conference Center, Havana, Cuba, April 14, 2000] AT

Every single speaker alluded to the debt tragedy that limits our resources for economic and social development in a thousand different ways. There was practically unanimous agreement on the view that the benefits of globalization extend to only 20% of the world’s population, at the expense of the other 80%, while the gap between the wealthy countries and the marginalized world grows increasingly wider. There was also a unanimous approach to the need for a transformation of both the United Nations and the international financial system. One way or another, every delegation expressed the view that unequal and unfair trade is decimating the Third World’s export revenues through tariff and non-tariff barriers that deprive it of the minimum amount required to pay off debts and achieve sustainable economic and social development. Equally unanimous was the complaint that scientific and technical development, currently monopolized by the privileged club of wealthy countries, remains beyond our reach, for it is the wealthy countries that control the research centers, hold almost 100% of patents, and increasingly hinder our access to know-how and technology. Quite a few leaders of the South took it upon themselves to remind us of something that is barely mentioned in the manuals on neoliberal policies and economics: the shameless theft of the most highly qualified minds of the Third World. The North countries are appropriating them because the South cannot offer enough research centers, and much less the high salaries that draw these minds to the consumer societies, which did not spend a penny on training them. In addition, many of the outstanding youths from the Third World studying at 3 universities in the former colonial powers or other wealthy countries do not return home after graduation. Many of our world leaders used really overwhelming figures and statistics to reflect the sum total of accumulated financial obligations and the brutal mockery at dozens of the poorest countries of which only four have been targeted for a slight relief. There is a clearly resounding clamor for the Third World’s debt to be considerably reduced if it cannot be completely cancelled, which is what would be most fair and equitable for the peoples who have paid it off many times over in the course of centuries past and present. Many of our colleagues have addressed the need to establish fiscal obligations on various activities in order to finance development. Cuba has sustained, and steadfastly insists, that a 1% tax on all speculative operations would suffice to finance the development of the Third World. Pay no attention to those who claim that it would be impossible. The technical resources and know-how currently available would make it perfectly possible. When one hears the participants at this Summit describe the billions of people who receive less than two dollars, less than one dollar or only a few cents with which to survive, one might come to believe that our planet is devoid of even the slightest sense of humanity. Nobody could have imagined that after the century of the revolution for liberty, equality and fraternity over 200 years ago, the century of accelerated industrialization that followed or that of great breakthroughs in communications, science and the productivity of human labor, which has just come to an end, we would be discussing the hundreds of millions of people who are going hungry, malnourished, illiterate, unemployed and suffering from disease, in addition to the colossal numbers of children who are undersized or underweight for their age, who have no access to schools or medical care, or who are forced to work at grueling and low-paying jobs, not to mention infant mortality rates that are 4 sometimes over 20 times higher than in the wealthy nations. These are the permanent human rights reserved to us. Fixed in our memories, as a symbol of our era, is the figure of 36 million people in the world infected with AIDS, of which 26 million live in the African continent, as indicated by the Secretary General of the United Nations; medical treatment for them would require 10,000 US dollars per person per year. And, in the next twelve months, another six million newly infected people will engross this figure. Why do all of these happen? How much longer will it last? One way or another, practically everyone here expressed their expectations about this Summit. Never before had I seen such awareness. Let us hope that we are as aware of our combined strength as we are of the pettiness and the injustices we suffer. Perhaps in the future people will speak in terms of before and after the first South Summit. It is up to us to make it happen. People used to talk about apartheid in Africa. Today, we can talk about apartheid throughout the world where more than four billion people are deprived of the most basic rights of human beings: the right to life, to health, to education, to clean water, to food, to housing, to employment, to hope for their future and that of their children. At the rate we are going, we will soon be deprived even of the air we breathe, increasingly poisoned by the wasteful consumer societies that pollute the elements essential for life and destroy human habitat. Natural disasters like those that have affected Central America, Venezuela, Mozambique and many other countries -- almost all of them in the Third World and all in the course of barely 18 months-- 5 were completely unprecedented in the 20th century. They took the lives of thousands of people. These are the consequences of climatic changes and the destruction of nature and the blame cannot be laid upon those of us gathered here to fight not only for universal standards of justice but also for the preservation of life on the planet. The wealthy world pretends to ignore that slavery, colonialism and the brutal exploitation and plunder to which our countries were subjected for centuries are the causes of underdevelopment and poverty. They look upon us as inferior nations. They attribute the poverty we suffer to the inability of African, Asian, Caribbean and Latin American peoples, that is, of dark and yellow skinned, indigenous and mixed-race peoples to achieve any degree of development or even to govern ourselves. They speak of our flaws as if it were not they themselves who impregnated our pure and noble ancestral peoples with the vices of the colonizers or the exploiters. They also pretend to ignore that when Europe was populated by those whom the Roman Empire called barbarians, there were civilizations in China, India, the Far East, the Middle East, and north and central Africa that had created what are still known today as World Wonders and that had developed written languages before the Greeks learned to read and Homer wrote The Iliad. In our own hemisphere, the Mayans and pre-Incan civilizations had attained knowledge that still today continues to astound the world. I am firmly convinced that the current economic order imposed by the wealthy countries is not only cruel, unjust, inhuman and contrary to the inevitable course of history but also inherently racist. It reflects racist conceptions like those that once inspired the Nazi holocaust and concentration camps of Europe, mirrored today in the so-called refugee camps of the Third World, which actually serve to concentrate the effects of poverty, hunger and violence. These are the same racist conceptions that inspired the monstrous system of apartheid in Africa.

### Solvency

#### Either we shift systems now or risk total collapse – justice demands reforms

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

6. Creating a hunger free, suicide free India: an agenda for the future of food The future of food and agriculture in India appears dismal under the rules of globalisation which promote corporate control. The corporate future will ensure that landlessness will grow, farmers will be transformed from owner-cultivators to serfs controlled by contracts, seed and water will be the private property of global corporations who will sell it at high cost to farmers. In the future based on WTO rules, hunger will grow, and governments will fail to guarantee their people the right to food and their farmers the right to food sovereignty. But this future is not inevitable. Other futures are being created, based on alternative principles and practices which will over time bring policy shifts. 6.1. Principles and policies for the future of food (a) Food sovereignty and food security Every person, every community, every country has a right to be able to produce to food or have access to food and to shape their food and agriculture economies. (b) Right to food is a fundamental human right Food is the first and foremost source of sustenance, and only a secondary commodity for trade. The Right to food is a fundamental right. (c) Right to livelihood security for farmers The right to work is a fundamental right. For peasants and landless work- ers, this translates into livelihood security in agriculture. (d) Right to land Land rights are central to food sovereignty. Land reforms interrupted or reversed by globalisation need to be reintroduced and made central to peace and security of the people. (e) Right to seed/farmers’ rights Farmers are the first and last breeders. Farmers’ rights are collective rights based on collective, cumulative innovation. Farmers have a right to seed and to be free of seed monopolies. Biodiversity must be conserved and protected as a commons. Corporations are liable for seed failure and genetic pollution. The polluter pays’ principle must be applied to genetic contamination of crops and food. (f) Right to water as a public good/commons Right to water is a community right and a fundamental right. Farmers and communities have a duty to conserve and share water and manage it as a commons. The polluter pays’ principle must be applied to water pollution. (g) Sustainable production Sustainable agriculture is good for the environment, conserves biodiversity and water, and reduces costs of production for farmers. In terms of overall output, it has higher productivity. (h) Decentralisation Decentralisation is becoming an ecological economic and political necessity. Climate change is making centralised resource systems, which contribute to greenhouse gases, more vulnerable to breakdown. Centralisation in the hands of a few corporations is also responsible for exploitation of farmers and col- lapse of farm prices. Decentralisation requires priority to localisation of mar- kets and distribution. (i) Diversity Biological diversity of farms and agro-ecosystems and cultural diversity of food systems and cuisines produces more, better and healthier food and richer cultures. (j) Food safety and food quality The industrialised globalised food system is creating food hazards and unhealthy foods. Food safety and food quality requires ecological production, decentralisation and diversity, instead of chemical production, centralisation and monocultures. (k) Small farms Small farms produce more livelihoods and more food than large industrial farms and manage resources more sustainably. The future of agriculture must be based on small farms and small farmers, who are the backbone of agri- culture. (l) Support and subsidies Support for agriculture is a food security imperative. Public support must be directed at sustainable production and a fair market, not for corporations and traders, toxic chemicals and GMOs and unhealthy food production. (m) Just and fair prices Agriculture prices are falling below survival levels to sustain small peasants and landless workers. Food prices are rising and taking food beyond the reach of the poor. A floor must be guaranteed to ensure just prices to farmers. A ceiling must be ensured to keep food accessible to the poor. (n) Just and fair trade Current rules of trade benefit corporations and destroy farmers. They pro- mote dumping and deceitful and forced trading. Trade rules must be rewritten to ensure food first, not trade first. Countries have a right to restrict imports, protect livelihoods and ensure food sovereignty. (o) Food not trade first Trade first policies have reduced food to a commodity, reduced agro-biodi- versity to 7 globally traded crops with a handful of corporations controlling input and trade. Food and nutrition need to be put first in agricultural policies.

#### Thus the plan: The Republic of India should implement programs to support organic agriculture. This involves a shift from industrial agriculture, which uses monocultural production by large corporations for exports, to sustainable agriculture, which uses organic farming techniques by small farmers for local consumption

#### Plan Solves.

NCOF [National Centre of Organic Farming, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India. “About Us.” Last updated 7/2/11] AJ

Our Objectives Promotion of organic farming in the country through technical capacity building of all the stakeholders including human resource development, transfer of technology, promotion and production of quality organic and biological inputs, awareness creation and publicity through print and electronic media. Statutory quality control of biofertilizers and organic fertilizers under the Fertilizer (Control) Order (FCO), 1985, including revision of standards and testing protocols keeping in view the advances in research and technology and bringing remaining organic inputs under quality control regime. Capacity building for soil health assessment, organic input resource management, technology development through support to research and market development. Capacity Building for low cost certification system known as “Participatory Guarantee System”.

## 1AC

### Enviro

#### Advantage 1 is the environment

#### Industrial agriculture is a result of a model of production that prioritize crop production over environmental protection – this export-oriented model that is expanding in the status quo

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[Carmen G., “AN ENVIRONMENTAL JUSTICE CRITIQUE OF COMPARATIVE ADVANTAGE: INDIGENOUS PEOPLES, TRADE POLICY, AND THE MEXICAN NEOLIBERAL ECONOMIC REFORMS”, University of Pennsylvania Journal of International Law, 32 U. Pa. J. Int'l L. 723, Spring]

5.3. The Conflict between Agro-Export Specialization and Agro-Biodiversity¶ The theory of comparative advantage promotes economic specialization in goods that a country produces relatively more efficiently. For countries well-suited to agricultural production, the theory of comparative advantage would counsel specialization in several primary agricultural commodities and importation of manufactured goods. One of the lessons of the Mexican case study is that extending the principle of specialization from industry to agriculture is fundamentally inconsistent with the agrobiodiversity necessary to protect the integrity of the world's food supply. Cultivating different varieties of corn designed to resist different environmental conditions enables local farmers to diversify their risk in the event of crop failure. This genetic diversity is also essential to the world's plant breeders as they seek to develop new varieties to address the food security challenges of the 21st century, including climate change.The lessons of the Mexican case study are broadly applicable to other crops. One of the great risks posed to small farmers in developing countries and to the resilience of the world's food supply is the pressure to abandon traditional, biodiverse cultivation techniques in favor of uniform seeds, chemical fertilizers, and synthetic pesticides. Indeed, the U.N. Food and Agriculture Organization reports that seventy-five percent of the world's food crop diversity was lost in the 20th century. n222 Although thousands of food crops have been cultivated since the beginning of agriculture, four crops (corn, wheat, potato, and rice) currently supply sixty percent of the world's dietary energy from [\*769] plants. n223 Furthermore, the genetic base of these crops is alarmingly narrow. Genetically uniform, high-yielding varieties have displaced traditional varieties for 70 percent of the world's corn; 50 percent of the wheat in Asia, Africa, and Latin America; and 75 percent of Asian rice. n224 The replacement of biodiverse agroecosystems by monocultures is destroying the reservoir of genetic diversity necessary to enable local farmers and the global food supply to recover from serious environmental disturbances - including the floods, droughts, and other dislocations associated with climate change. n225 The cultivation of uniform crop varieties also increases vulnerability to pest and disease infestation (because different crops and different genetic strains of a particular crop may be more resistant to certain pests), depletes the soil of vital nutrients, requires the use of environmentally harmful chemical fertilizers and pesticides, and impairs human nutrition by reducing the varieties of foods consumed. n226 The expansion of export monocultures as a consequence of agro-export led development strategies promoted by the IMF and the World Bank has imposed severe environmental costs on a wide range of developing countries. These costs include deforestation, unsustainable uses of freshwater resources, agrochemical contamination of groundwater and surface waters, and greater pesticide-related illnesses. n227

#### This export-focused model prioritizes extraction of agricultural commodities over protection of the environment

Wilson 9 [(Adam, Human Resources Management) “Social and Ecological Implications of Sustainable Agriculture” The 9th International Students Summit on Food, Agriculture and Environment in the New Century] AT

Globalization and the industrialization of agriculture over the past half-century have changed the composition and nutritional value of food cultures around the world. Rather than seeking out new technologies in the form of genetically modified organisms to increase our food security we, as a global community, might assess our attitudes and relationships with ourselves, each other and nature, adjusting our behavior to lead more sustainable lifestyles. Community supported agriculture and sustainable agriculture are exemplary methods of how this can be accomplished. This paper will explore the different methods of sustainable, community supported agriculture that are currently being employed worldwide and how they can be put into practice at larger scales in order to mitigate human impact on the environment while providing necessary sustenance and basic human interactions. Artisanal forms of harvesting food are being abandoned in favor of corporately owned and operated methods of resource extraction that seek to maximize profit and yield at the expense of the environment. As a result consumers have become increasingly disconnected from the farmers, ranchers, and fishers who produce the food they eat. These changes however have given rise to global initiatives, such as the slow foods movement and community supported agriculture, which aim to increase the utilization of sustainable agricultural techniques and the reinstatement of local food systems. Small and large-scale implementation of sustainable, community-based agriculture is being conducted throughout the globe; from Cuba to Africa to East Lansing. Through the use of case studies and empirical evidence this paper will investigate how a shift from the current global-industrial model of agriculture to a locally-based sustainable model can increase food security and assist in alleviating pressures associated with environmental degradation and energy consumption. Sustainable agriculture, when applied in the context of local food systems, may diminish the amounts of environmental pollutants emitted without compromising the ability to produce suitable amounts of food. Furthermore, regionally grown and consumed foods are less susceptible to economic and climate variations than their industrial counterparts due to the decreased dependence on long-distance delivery systems. These types of systems also have the potential to bring communities closer and stimulate regional economies while preserving traditional food cultures.

#### Industrial agriculture threatens local cultures – agrobiodiversity is an important facet

Pant and Ramisch 10 [(Laxmi PhD candidate at the University of Guelph, research focuses on innovation systems in agriculture with field research; and Joshua, Associate Professor, School of International Development & Global Studies, University of Ottawa) “Beyond Biodiversity: Culture in Agricultural Biodiversity Conservation in the Himalayan Foothills” Beyond the Biophysical Pg 73-97] AT

Abstract This chapter explores the cultural dimensions of agricultural biodiversity conservation through a case study of the relationships between caste-based food traditions and local varieties of rice and finger millet managed by smallholder subsistence farmers in the Himalayan foothills of western Nepal. The empirical material for this study is derived from interviews with primary stakeholders, a household survey, and direct observation of cultural practices and spiritual traditions of rural farming communities. The different caste-based food traditions in the study area relate directly to differential use and appreciation of the local landraces of both crops, which are in turn conserved or managed to varying degrees. The empirical data provide strong evidence that agro-biodiversity management is not simply an agronomic or biogenetic issue, but that cultural preferences and practices are central to the creation, maintenance, and ultimate viability of biodiversity in agroecosystems. These findings suggest that future conservation efforts must engage local communities and their cultures fully in agro-biodiversity management, through participatory plant breeding, increased awareness and marketing of landrace identity within com- modity supply chains, and through advocacy on behalf of smallholders’ rights. Introduction Cultural diversity and agricultural biodiversity are inextricably linked. The ecologically complex settings that gave birth to major ancient civilizations are also the centers of domestication for the crops that are still globally important today (Rhoades and Nazarea 1998). Human cultures and plant populations have coevolved to the point that cultural knowledge about production, processing, and storage are now essential to the survival of both domesticated crops and humans (Nazarea-Sandoval 1992). Domesticated crops by definition reflect human agency, shaped by a legacy of preferences that have valued or discarded species or varieties not just for their nutritive value but also for their taste, color, symbolism, or other contributions to daily social and cultural lives (Zimmerer 1991). While conventional agricultural science has been interested in the raw genetic material held and managed by farmers all over the world, it has been much less appreciative or understanding of how local knowledge and cultural practices have created or sustained this landrace1 diversity (Nazarea 1995). Indeed, positivist science strives to identify and isolate universal scientific principles from cultural practices and spiritual traditions, downplaying relationships between culture and agriculture in general, and culture and agricultural biodiversity in particular. While this paradigm has certainly furthered human understanding and manipulation of simple systems, the generalizations of positivist science are much less useful for generating practical prescriptions for sustainably managing complex natural systems (Gadgil et al. 1993). This chapter uses case study material from the rice and finger millet food traditions of Nepal to argue that agricultural biodiversity management must necessarily engage with local cultural knowledge and practices. This research employs Cernea’s (2005, p. 75) concept of culture in agriculture as, “a cluster of fundamental building blocks of agricultural production processes, rural [economic, social, cultural and spiritual] life, and their actors, whose understanding is indispensable for grasping the deeper essence of agriculture.” Taking this recognition that “agro-biodiversity” is not a purely biological phenomenon, but rather one that is culturally constructed and relevant to given cultural (sub) groupings, will present scientists, farmers, and other land managers with opportunities for new approaches to biodiversity conservation. These include: (i) crop improvement research that integrates conventional and alternative scientific traditions, such as participatory plant breeding (PPB) (Morris and Bellon 2004); (ii) strategies to better identify, protect, and promote local landraces and genetic diversity through dedicated market supply chains or “slow food” movements (Jones et al. 2003); and (iii) lobbying for the customary rights and intellectual property rights (IPRs)2 of ethnic and rural farming communities (Escobar 1998). The chapter begins with a review of the “cultural” dimension of agro-biodiversity management. After a brief overview of international treaties on agricultural and human cultural diversity management, the limitations of contemporary practices for addressing the cultural dimension in agro-biodiversity conservation are identified before moving to the empirical section. Case study data show how food traditions in Nepal relate to and maintain the genetic diversity of both rice (a high-status, prestigious crop) and finger millet (a lower-status crop) despite the availability of modern high-yielding crop varieties. Conclusions are drawn, with a series of policy suggestions for successful management of agricultural biodiversity and human cultural diversity. Culture in Agro-biodiversity Management The attributes of agro-biodiversity can be described at the genetic, species, and agroecosystem levels (IPGRI 2004). The genetic diversity of a crop manifests itself in variations such as plant height, spike length, and grain color of individuals within that species. A given population will therefore be heterogeneous with regard to these traits, which will be inherited by predictable proportions of the population as a whole and available for passing on to successive generations. At the agroecosystem level, agro-biodiversity encompasses not only the abundance and diversity of species – i.e. plants (crops, weeds, trees, etc.), humans, and nonhuman animals – but also the biophysical variations, such as upland and lowland conditions, irrigated and rain-fed, and arable farming and perennial vegetation. This agro-biological diversity interacts strongly with culture: culture shapes the environment and the environment in turn shapes cultural preferences. Biological diversity (from the genetic through to the landscape level) is directly affected and moulded by farmers’ practices and circumstances. At the same time, biological diversity constrains or facilitates the opportunities available to rural elements of society, from individual or household livelihoods through to wider communities or national economies. Because many of the planet’s areas with the highest biological diversity are inhabited by indigenous and traditional peoples, the 1988 Declaration of Belém by the International Congress of Ethnobiology claims an “inextricable link” between biological and cultural diversity. The term “biocultural diversity” has also been proposed to describe this intimate interrelationship (Posey 1999a), although it has been challenged as a term that does not reflect precisely on the nature of that relationship, and for seemingly privileging the analysis of “exotic” or isolated communities (Cocks 2006). Critics of agricultural modernization would argue more generally that trends towards industrial agriculture and monocultures of hybrid, “improved” crop varieties threaten not only the cultural and livelihood diversity of rural peoples but also the genetic, agro-biodiversity that has supported those societies (Shiva 1997; Altieri 1987).

#### This cultural destruction is a manifestation of colonial structures of power – only revitalization of indigenous knowledge production can dismantle destructive ideologies

Kortright 3 [(Chris, Sessional Lecturer and Adjunct Professor of Anthropology, University of California) “Colonization and Identity” The Anarchist Library Jan 1] AT

Colonization and Identity Those who discovered and conquered other lands were entitled to them, their riches, and their spoils. The conquered people could be treated as slaves, banished to other lands, or assimilated into the society and institutions of the conquering people — Vine Deloria, Jr. (1983) The present global stratification and make-up has been dictated in totality by the colonization and conquest of European nations. Although direct colonialism has largely ended, we can see that the ideology of colonialism has lingered in the identity of people within the general cultural sphere as well as the institutions of political, economic, and social practices. Colonization or the “colonial complex” is: (1) colonization begins with a forced, involuntary entry; (2) the colonizing power alters basically or destroy[ing]s the indigenous culture; (3) members of the colonized group tends to be governed by representatives of the dominate group; and (4) the system of dominant-subordinate relationship is buttressed by a racist ideology. (Marger, 2000:132) This process has created the identities of both the colonized and the colonizer with pathological effects. It has destroyed both the lives and the cultures of the colonized and implanted a culture of destruction upon all inhabitants, both the colonized and the colonizer. There are two reasons for exploring the pathology of colonization. First we must understand the creation of the present social, political and economic dichotomy we face, but more importantly we must understand the psychological problems created by colonization, so we as humans can deconstruct the present Leviathan we live in and create a world based on cultural diversity, liberty, and mutual aid. The Nature of Colonization — Empires, Land, and Cultures The Ideology of Colonization Colonization is based on the doctrine of cultural hierarchy and supremacy. The theory of colonialism is the domination by a metropolitan center which rules a distant territory through the implanting of settlements. It is the establishment and control of a territory, for an extended period of time, by a sovereign power over a subordinate and “other” people which are segregated and separated from the ruling power. Features of the colonial situation include political and legal domination over the “other” society, relations of economic and political dependance, and institutionalized racial and cultural inequalities. To impose their dominance physical force through raids, expropriation of labor and resources, imprisonment, and objective murders; enslavement of both the indigenous people and their land is the primary objective of colonization. Another technique used to subdue the native population is the sacking of cultural patterns; these cultural values are stripped, crushed and emptied. The colonialists see their culture as a superior culture; usually tied to either Cultural Evolutionary or Social Darwinist theories. In an attempt to control, reap economic benefits, and “civilize” the indigenous peoples the colonialist dismantles the native cultures by imposing their own. There is a destruction of the cultural values and ways of life. Languages, dress, techniques are defined and constructed through the ideology and values of the colonialist. Setting up the colonial system does not destroy the native culture in itself; the culture once fluid, alive and open to the future becomes classified, defined and confined through the interpretation, imposed oppression, and values of the colonialist system. At this point the native culture turns against its members and is used to devalue and define the identity of the native population. Their constant and very justified ambition is to escape from their colonized condition, an additional burden in an already oppressive status. To that end, they endeavor to resemble the colonizer in the frank hope that he may cease to consider them different from him. Hence their efforts to forget the past, to change collective habits, and their enthusiastic adoption of Western language, culture and customs. (Memmi, 1965:15) The Question of Land and Resources Human History is rooted in the earth, everything is centered around or is connected to our use of land and territory. This has meant that much of human activities has revolved around the territory they live in and extract resources from. This has lead some cultures to desire more land and obtain new territory; therefore they must deal with the indigenous peoples of that land. At a very basic level colonialism is the desire for, settling on, and controlling of land that a culture does not posses; land that is lived on an owned by other people. Edward Said points out the rate at which Europe acquired lands at the end of their colonial reign. Consider that in 1800 Western powers claimed 55 percent but actually held approximately 35 percent of the earth’s surface, and that by 1878 the proportion was 67 percent, a rate of 83,000 square miles per year. By 1914, the annual rate had risen to an astonishing 240,000 square miles, and Europe held a grand total of roughly 85 percent of the earth as colonies, protectorates, dependencies, dominions, and commonwealths. (Said, 1993:8) It was not only the acquisition of land that drove colonialism, but there was also a desire for natural resources and labor. The colonialist countries needed raw materials to support their growing economies. Places such as the Americas and Africa offered natural resources they could utilize for manufacturing — as well as opened up new markets to sell their goods. Political structures of the colonial countries both economically and militaristically backed the establishment and maintenance of the colonies, but it can not be ignored that a high percentage of the funding for the colonies were provided by emerging capitalists; the Europeans extended their power by promoting merchant houses and chartered companies. In settler colonies like Kenya and Mozambique, there was a plantation-based export-commodity production of products like cotton, tea, coffee and sugar. Places like South Africa and Zaire were exploited for their gold and diamond mines. For the economies of the colonialist states the resources were harvested by the native populations (either through direct slavey or extreme wage-slavery). Colonial Identity “The colonial situation manufactures colonialists, just as it manufactures the colonized (Memmi, 1965:56).” If we are to look at how colonization created the identities of both the colonized and the colonizer, we must recognize that historical situations are created by people, but people are in turn created by these situations. The way a person sees the world, both geographically and culturally, is dictated by their abstract understanding of the world. Although culture does exist as a tangible entity, it is the abstract ideologies of comparison between cultures that create cultural identities situated in social, economic, and political hierarchies. It is in this abstract world of ideas that the colonizer, by creating the “other” which was to be colonized, created his own identity in opposition to that of the colonized. (Said, 2000:71–74) The Colonizer The Colonialist that accepts The colonist who was either born in the colony or traveled there to better himself economically (often those who traveled and established themselves in a colony were from poor or working class backgrounds; only in the colony did they have a chance to make something of themselves) and embraces the colonial structure in which he was, in his eyes, entitled to was obviously the majority of the colonists. By accepting the role of the colonizer, he accepted the responsibility and identity of both himself and the colonized. Although the colonized are an interracial and necessary economic part of the colony, the colonizer must disown the colonized and defend his identity both intellectually and physically. He must accept the violence and poverty he sees daily; it is his job to rationalize the actions of himself and fellow colonialists because he needs to absolve himself of the atrocities committed in the name of economic and cultural superiority. This man, perhaps a warm friend and affectionate father, who in his native country (by his social condition, his family environment, his natural friendships) could have been a democrat, will surely be transformed into a conservative, reactionary, or even colonial fascist. He cannot help but approve discrimination and codification of injustice, he will be delighted at police tortures and, if the necessity arises, will become convinced of the necessity of massacres. (Memmi, 1965:55–56) The contradiction of his lifestyle, even with the economic benefits and cultural justifications, takes a tool on his psyche. Deep down inside himself he lives with the knowledge of his actions, and no matter how much he justifies or rationalizes his behavior the colonist pleads guilty. But a person cannot live with such contradictions, and thus the colonist creates an identity to defend his actions. It is at this point that he creates the image of the colonist as a humanitarian, who just happens to gain economic benefit. In his eyes he is bringing “civilization” to the “savages.” As Social Evolutionary Theory teaches the colonialist; all cultures evolve into centralized industrial nations. He is helping these “backward’ countries reach their evolutionary goal. He is bringing high civilization to them, and yes there is some hardship, but evolution is rough; if the natives would just stop resisting this natural process and abandon their traditional ways, they could learn to live the right way. The Colonialist that Resists At the core of the colonizer is his privilege, some individuals born or traveled to the colonies felt overt guilt for this privilege. At first they deny such privilege, but when it is in their face daily it can no longer be ignored; at this point they try to resist, but to do so would be to give up their privilege. He finds himself on the other side of the scale from the colonized. If his living standards are high, it is only because the colonized live in poverty. He has positions of authority because these positions are reserved for him. To refuse means to either withdraw physically from the colonial condition or remain there and fight to change them. The choice to stay and fight puts the colonizer into a life of contradiction; he is now at odds with his country men, and cannot easily escape mentally from the concrete situations and ideology that make up the actual relationships of the colony. This contradiction deprives him of all coherence and tranquillity of his identity. He finds that it is one thing to refuse colonization, but it is quite another to accept the colonized and be accepted by them because who can completely rid themselves of bigotry in a country and system founded on such a principle. No matter how genuine he is, there remains a fundamental difference between himself and the colonized. “In other words, either he no longer recognizes the colonized, or he no longer recognizes himself (Memmi, 1965:32).” In resisting he is aiding the birth of a social order which may not have room for him. He dreams of a new social order were the colonized stop being colonized, but he does not see a transformation of his own situation and identity. In the new harmonious social order he will continue being who he is, with his language intact and his cultural traditions dominating because though he hates the oppression of colonization he too buys the theories of Social Evolution. In other words, he hopes to continue his identity within the abstract concepts of the dominate culture with a situation where the dominate culture would not exist. He calls for a revolution, but refuses to conceive that this revolution would result in the overthrow of his situation and identity. It is hard to imagine or visualize one’s own end, even if it’s to be reborn as another; especially if like the colonized, one can hardly evaluate such a rebirth. The Colonized Images and Myths of the Colonized To justify the colonization of a people, images need to be created so that the subjugation makes sense. These images become the identity of the colonized. There are many images used, but one universal image that has been put on native people is laziness. This image is a good example of how the colonizer justifies his actions. This image becomes the excuse for the colonial situation because without such images the actions of the colonialist would appear shocking. The image of the lazy native is a useful myth on many levels; it raises the colonizer and humbles the colonized. It becomes a beautiful justification for the colonizer’s privilege. The image is that the colonized are unbearably lazy; in contrast the colonizer is always in action. It implies that the employment of the colonized is not very profitable, therefore justifying the unbearable wages paid to them. The logical assertion would be that colonization would profit more by employing experienced workers, but this is not the case. The qualified worker, then comes from the colonizer’s class; they then earn three to four times that of the colonized. It is more profitable to use the labor of three of the colonized and pay them less than what would be paid to one colonialist. Therefore the colonialist becomes the specialist, and the colonized become the laborers. Dependancy Complex of the Colonized Dependancy Theory is when the colonizing states exploit their colonizing regions that enhance their own development and accumulation of capital. When wealth and resources are extracted from the colony, colonist stunts the development or undo past development. This lack of development or modernization is placed on the colonized as their failure to be able to compete with the colonial state. What development that does occur is then distorted by a dependancy relationship and creates both internal and external problems to the local communities, thus creating an image of inadequacy upon the colonized. The colonial states manipulate the industrialization process in order to increase their profits, by undermining the local autonomy of the native population. Often they control supplies and resources available to the colonized community, forcing them to produce cash-crops instead of food, then sell food at an inflated price to the native population. This not only makes the colonized dependent psychologically, but also dependent on the colonial system for basic resources. If one adds that many Europeans go to the colonies because it is possible for them to grow rich quickly there, that with rare exceptions the colonial is a merchant, or rather a trafficker, one will have grasped the psychology of the man who arouses in the autochthonous population “the feeling of inferiority.” (Fanon, 1967:108) Colonial Conflict/Relationship The image of the settler and native village, although a physical reality of habitation; there is a psychological distinction between the two, and when we see this physical and mental connection, there is an understanding of identity. The colonial world is really a Manichean world, there is that of the native village and that of the settler’s village. Between these two worlds are the policeman and the soldier, they are the true officials and liaisons of the colonial system. The dividing lines between these two separate worlds are the barricades, barbed wire and police stations. The Settler Village The settler town is strong; it is made of stone and steel, and the streets are covered in asphalt. The town is brightly lit. The streets are clean and the people are clean. They are all well clothed and well feed. Education is a given in this world. “The settler’s town is well-fed town, an easygoing town; its belly is always full of good things. The settlers’ town is a town of white people, of foreigners. (Fanon, 1963:39) The Native Village The native village, otherwise known as the shanty-town, getto, or reservation, is an infamous place throughout the colony. The colonized are born there, and die there with no notice or thought given to them. It is rarely open, the space is cramped and stifling (both mentally and physically.) The people live on top of each other, hungry, malnourished, barely clothed. There are next to no streetlights and darkness is not only a physical but psychological reality. The walls that are built to keep the natives out of the settler town, in fact keep them in the squaller of the native town. There is no way out of this village. The barbed wire and lack of education, hand in hand with skin color, makes sure the doors are closed and the colonized stay in their village. “The native town is a crouching village, a town on its knees, a town wallowing in the mire.” (Fanon, 1963:39) Freedom from Despotism “The crux of the matter rests, not merely in the resistance to the predatory nature of the present Eurocentric status quo, but in conceiving viable sociocultural alternatives (Churchill, 1996:31).” Decolonization Most decolonization theory is solely focused on the decolonization of the colonized. There is a necessary reason for this. The issue of colonization and the atrocities committed by the colonists towards the colonized is no less than cultural and physical genocide, but as Frantz Fanon discusses in The Wrenched of the Earth, there is no way to return to a pristine/pre-colonial time, so the only way to change the stratification of the post-colonial world is through decolonization. But this decolonization cannot just be of the colonized, this process must be also of the colonizer. White people need to deconstruct their culture and ideologies because the stratification is founded and maintained in our hegemony in regards of this culture of colonization. The new relationships are not the result of one barbarism replacing another barbarism, of one crushing of man replacing another crushing of man. What we Algerians want is to discover the man behind the colonizer; this man who is both the organizer and the victim of a system that has chocked him and and reduced him to silence. As for us, we have long sense rehabilitated the Algerian colonized man. We have wrenched the Algerian man from a centuries-old and implacable oppression. We have risen to our feet and we are now moving forward. Who can settle us back in servitude? (Fanon, 1965:32) Cultural Revitalization The key to decolonization is a conscious act of cultural revitalization. There needs to be a rebirth of cultures dismantled during colonialism. The cultures of colonized and traditional people need to teach this culture lessons of the past. In this I don’t mean teach the Eurocentric power structure the mistakes of their past, but the teaching of traditional knowledge, values and lifestyles. This also means returning stolen lands and creating relations that are not based on white privilege. In a very real sense, we need to overthrow our own existence to be reborn, in the sense that Memmi speaks of. “Only in that way can we transcend the half millennium of culture shock brought about by the confrontation with Western civilization. When we leave the culture shock behind we will be masters of our own fate again and be able to determine for ourselves what kind of lives we will lead.” (Deloria, 1999:153) With understanding of political, economic and cultural knowledge of traditional culture, white people can break away from the pathology created with colonization and live in a culturally diverse society; one in which we live under a new cultural understanding in solidarity with those living within their traditional cultural ways. “I may say that I believe such an agenda, which I call ‘indigents,’ can and will attract real friends, real allies, and offer real alternatives to both marxism and capitalism. What will result, in my view, is the emergence of a movement predicated on the principles of what are termed ‘deep ecology,’ ‘soft-path technology,’ ‘anarchism,’ and global ‘balkanization.’” (Churchill, 1996:480) This traditional knowledge offers us a way out of the stratification and poverty, both economically and psychological, that we face to day. It is a starting point to destroying the structures established by colonial ideologies, and creating a society based on equality, liberty, and mutual aid.

### Neolib Advantage

#### Advantage 2 is neoliberalism

#### Export focused agriculture has made economies heavily dependent – this neocolonial exploitation makes local economies cyclically dependent and subservient to the Western world – their arguments are rooted in a logic of colonialism

Timms 8 [(Benjamin F. Timms, Social Sciences Department, California Polytechnic State University) “Development theory and domestic agriculture in the Caribbean: recurring crises and missed opportunities” Caribbean Geography 2008 15(2)] AT

Precursor to Development: Colonial policies and the absence of domestic agriculture Economic policy in the British Caribbean during the early colonial period centred on the mercantilist doctrine of market protection. The strategy focused commodity trade on importing raw materials from the colonies and exporting manufacturers, creating a favourable balance oftrade for the benefit ofthe metropole (St Cyr, 1993). Production of foodstuffs in the colonies was discouraged as resources were focused on tropical export products while sustenance needs were met through importation of agricultural products produced in the temperate regions ofthe metropole. There were con\rary voices calling for diversified domestic production in the Caribbean, and a proposal to ban imported foodstuffs to force domestic production in the colonies was put before the British Parlia­ ment in 1698 (Williams, 1970). Predictably, this proposal was rejected on the basis that it would decrease land devoted to the prize tropical product of the period; namely sugar. During the majority of this period labour was provided through slavery, but even after emancipation the denial of land and other schemes forced the majority of the newly free labour-force to work on the plantations for the benefit of the metropole (Beckford, 1975; Best, 1975; MandIe, 1982). Industrialisation in Britain in the nineteenth century created a need for access to foreign markets and mercantilist market protection was abandoned in favour of Adam Smith's classical free trade economics, as evident in the repealing of protestionist duties on sugar in 1852 (Williams, 1970). For the Caribbean the result was largely the same as domestic agriculture was viewed as a sector ofdisadvantage and all efforts were focused on maximising the region's comparative advantage in sugar production for export. However, the result offree trade policies created a crisis for the British West Indian sugar industry where, by the 1890s, competition from other tropical colonies and sugar beet production in the temperate regions of Europe caused sugar prices to crash (Richardson, 2007). As a response the 1897 British Royal West Indies Commission, organised to assess the needs o f the Caribbean colonies, presented a critique o f the sugar plantocracy and endorsed the promotion ofsmall peasant farms (Williams, 1970). The Commission recommended the creation ofbotanic gardens on each ofthe islands, focused on econom­ ically valuable plants with agricultural extension agents to pass new technologies to the small farming sector. Henderson and Patton (1985) claimed success of these extension agents throughout the Lesser Antilles, albeit in terms of increased exports of vegetables with economic value. Yet this period of crisis created an opportunity to diversify and challenge the structural dominance ofthe plantation economy. For the most part the recommendations of the Commission were ignored as the colonial authorities gave domestic agriculture scant attention. Prior to emancipation slaves were at times permitted to work provision grounds and, post-emancipation, a peasant sector did emerge in the recesses where the plantations either broke down or neverreached (Beckford, 1975; Levitt & Best, 1975; Mintz, 1985). But the production of domestic agriculture was for the most part limited to familial consumption and informal trade. It was not until the advent of the domestic market that the small farming peasantry began to have a greater impact on Caribbean economies (Witter & Beckford, 1980). Geographically the market began a distribution network for domestic production which laid the groundwork for rural roads from hilly interiors to coastal centres of economic activity. Additionally, an interdependent relationship between capitalist plantations and the subsistence small farming sector developed through supplemental plantation field­ work for the farmers and foodstuffproduction to augment basic sustenance needs (Mintz, 1985; Witter & Beckford, 1980). Even with the concurrent evolution of a small farming peasantry, the end of the nineteenth century saw a region highly dependent on a declining sugar industry and imported foodstuffs. However, during World War II the blockage of shipping lanes created another crisis which provided an external impetus for the region to focus on satis­ fying basic needs (Taitt, 2007). The temporary disappearance of markets for sugar and supplies of basic foodstuffs resulted in a communal effort to produce for domestic demand, with the Caribbean largely feeding itself during the war (Jesse, 1994; Axline, 1984). The result suggested the possibility ofa Caribbean self-sufficient in food supply, albeit as a response to war imposed conditions. Development Theorised: W.A. Lewis and the inclusion of domestic agriculture It was in the post-World War II period that the era of formal development studies com­ menced. From within the Caribbean region re-emerged development theories justified to be appropriate to the particularities of the region, with the St Lucian born economist Sir Arthur Lewis arguably the most notable. Lewis detailed a dual economy for the Carib­ bean consisting ofa large subsistence sector and a small capitalist sector. The subsistence sector was considered unproductive as its marginal productivity was near zero due to the excessive amount of labour working on the small and base. Thus, labour could leave the subsistence sector without decreasing production or increasing the marginal wages. Meanwhile, the capitalist sector could increase profits through paying the low marginal wages detennined by the subsistence sector (Lewis, 1954). In effect, the large size of the subsistence sector created the conditions of a virtual unlimited supply of cheap labour which would contribute to capital accumulation and reinvestment in productive capacity (Lewis, 1954'; 1955). According to Lewis, the Caribbean islands could use the unlimited supply of cheap labour as a comparative advantage in attracting industries. In practical terms, initial efforts would be focused on manufacturing for export as it was the only sector capable of expanding without necessitating an expansion in domestic demand, particularly due to the small size ofdomestic markets and initially low wages (James, 1996). In relation, the lack of local capital and knowledge presupposed investment from foreign sources; although Lewis did prefer local capital ifavailable and felt it would eventually accumu­ late and be available for reinvestment (Figueroa, 1996). Meanwhile, the subsistence sector would shrink as agriculture modernised and became more productive through such investment (Lewis, 1954). By the time the condition of ~m unlimited supply of labour ended, due to the drying up ofavailable peasants to enter the workforce and the resultant rise in wages, capital accumulation and reinvestment in all sectors would create a balanced and modernised economy. Lewis's inclusion of domestic agriculture in his development theories is often overlooked as analysis focuses on aspects ofthe so-called 'industrialisation by invitation' model ofdevelopment (Beckford, 1972; Best, 1976). This is due to Lewis's dismissal of development that began with greater productivity in food for the home market since any increase in food production while other sectors remained stagnant would bankrupt the fanners for lack of growth in demand (Lewis, 1958). Further, the development process could not begin with agricultural exports due to the difficulty ofgetting favourable tenns oftrade for agricultural commodities and a corresponding requirement to focus efforts away from industrialising. Instead: 'The farmers' position is much more hopeful if development begins out­ side agriculture ... This in tum generates an increase in demand for agricultural products, and so development spreads from sector to sector'. (Lewis, 1958: 28). But just because Lewis believed development should begin outside agriculture does not preclude agricultural development, it simply would delay it until a growing market for increased agricultural production arose. By developing a non-agricultural sector there would be a concurrent rise in wages and demand for food (Johnson, 1982), thus creating an impetus for further stages of economic growth to occur in the domestic agricultural sector (Lewis, 1954). This illustrates Lewis's belief in balanced develop­ ment to avoid the loss of profits from the manufacturing sector through unfavourable tenns oftrade for imported foodstuffs (Lewis, 1955). Belat~dly, Lewis's prescriptions were not implemented correctly, particularly the premise for the increase in agricultural production for the domestic market. The concentration on 'industrialisation-by-invitation' was accompanied by a focus on agriculture for export, partly due to the entrenched plantocracy (Williams, 1970; Witter, 2004). The profits of the manufacturing sector were then squandered on imported products instead of being reinvested and development did not spread from sector to sector as Lewis had proposed (Demas, 1975). The results were disarticulated economies with a lack of local markets, low wages, and increasingly dependent on foreign capital, foreign markets, and foreign imports (de Janvry, 1981; A?'line, 1984). Radical Reprise: the Plantation School and the promotion of domestic agriculture The lacklustre results of the application of Lewis' theories were accentuated by high unemployment and lack ofimprovement for the majority ofthe populace. Itwas time for a populist response: 'Thirty years later, ifyou look at the evidence, all ofthis feverish activity in winning capital and entrepreneurship from abroad, appears now to have been an enduring futility'. (Best, 1976: 2). A growing cadre of Caribbean economists during the 1960s critically attacked Lewis' industrialisation-by-invitation model of development, which was blamed for growing foreign dependence that was antithetical with their struggle for greater economic autonomy (Girvan & Jefferson, 1971; Blackman, 1980; Bernal et al., 1984). Cultivated by such Caribbean economists as Lloyd Best, Norman Girvan, George Beckford, and Clive Y. Thomas, this group became known as the Plantation School due to their analysis of the plantation economy, dermed as situations where: 'the internal and external dimensions of the plantation system dominate the country's economic, social, and political structure and its relations with the rest o f the world'. (Beckford, 1972: 12). Deeply embedded in the plantation economy was the continued legacy of the colonial era whereby Caribbean islands remained subservient to foreign capitalist economies (Levitt & Best, 1975). The Plantation School pinned the continued foreign dependence of the region on Lewis and his influence on post-war industrialisation (Demas, 1975). The main criticism of Lewis, claimed the model, came from an alien historical context (classical theories of Western Europe) and, therefore, failed to see the structural obstacles imposed on the Caribbean that disallowed an internalising of economic growth and reinforced dependency on the metropole (Bernal et aI., 1984; Levitt & Best, 1975). The arrival of these Caribbean dependistas occurred during the era of independence for many of the islands of the Caribbean (Conway, 1998). The hope was that through independence the Caribbean could break dependence on the metropole by fighting foreign capital and control and concentrating on the structural problems of the domestic economy through resource allocation tow,ard domestic production. Creating more self-sufficient development would lead to balanced growth whereby: '[t]he process of capital accumulation becomes internally driven - that is, based on the national market with exports as an extension o f production for domestic use'. (Bernal et al., 1984: 72). For domestic agriculture this required breaking the plantation legacy of a perpetual reliance on imported foodstuffs for consumption, paid for by earnings from exports. In a principle reminiscent o f Lewis, Beckford claimed Without responsive food production the export earnings will just be frittered away on food imports, and whether the country is better or worse off will depend on the terms of trade between exports and food imports'. (Beckford, 1972: 189). The small fanner was important to achieving the goal of agricultural production for the domestic market as they were argued to be more productive than the plantations due to the utilisation of a larger percentage of their land in diversified production (Beckford, 1968; 1975; Williams, 1970; Marshall, 1985). Land redistribution from plantations to small farmers would increase production for the domestic market and lessen the dependence on volatile agricultural exports. Further, expanding the small farm sector would provide livelihood opportunities for the surplus labour which was not being drawn into the manufacturing sector as readily as Lewis had hoped (McDonald, 1980). In order for the small farming sector to deliver these benefits it would have to be provided with support services and initial protection from cheap imports as they built productive capacity. The Plantation School theorists proposed access to adequate land of good quality, the diffusion of technical knowledge, availability ofcapital for investment, subsidies, and tariff protection to achieve this support (Beckford, 1968; Bernal et al., 1984). For the first time theory was linked with policy in an attempt to increase agricultural development for the domestic market. Examples included the creation of the Caribbean Agricultural Research and Development Institute [CARDI] in 1975 to promote diffusion o f technical knowledge to small farmers through research and extension services, and the founding of the Caribbean Development Bank [CDB] in 1969 to provide capital for investment in agricultural development (Axline, 1984). The Plantation School's treatment of domestic agriculture had similarities with the 1897 British Royal West Indies Commission recommendation in supporting small farmers. Further, they shared Lewis' belief that agricultural production for the home market was necessary so that profits would not disappear through adverse terms of trade for imported foodstuffs, albeit they had different ideas on how this should be achieved. A poignant example was Jamaica's attempt at 'democratic socialism' under Michael Manley (Conway, 1998). Rising oil prices, decreased export revenue due to global recession, and soaring imported food prices in the mid-1970s stimulated the promotion of domestic agricultural programmes along the lines of the Plantation School's prescriptions, with a resultant increase in domestic food production (Manley, 1982; Weis, 2004; Witter, 2004). Unfortunately, while the oil crisis offered the opportunity to implement the Plantation School's theories, the experiment of promoting domestic agriculture was short-lived as external factors forced the transition from increased self-sufficiency to greater depend­ ence on the world market (Manley, 1982; Thomas, 1989; Weis, 2004). The oil crisis of the 1970s and subsequent global recession ofthe 1980s created severe fiscal crises for many states in the Caribbean, which opened the door for the imposition of a new economic policy which eroded the gains of the Plantation School's advancements (MandIe, 1982; Deere, 1990). Retrenchment and Retreat: Neoliberalism and the challenge to domestic agriculture Entering the 1980s Caribbean economies were faced with severe pressures resulting from high prices for oil and imported commodities, low prices for exports, stagnant or declin­ ing economic growth rates, and exploding national debt burdens (Harker, 1989). With several Latin American countries facing default on their debt, world financial institutions, primarily the International Monetary Fund [IMF], formulated policies to stabilise the global financial system through fiscal austerity. Termed Structural Adjustment Programmes [SAPs], conditions were placed on renegotiating debt and the approval of new loans which sought to reduce state expenditures and raise revenues to fulfil debt obli­ gations. These conditions commonly applied supply-side policies to raise revenues, such as controlling wages and devaluing the currency in order to lower the market price for exports. Theoretically this would raise demand for exports abroad and stimulate further production. To reduce state expenditures public services were cut and government staff­ ing reduced, fees for public services raised and taxes increased, and subsidies removed (Deere, 1990; Gayle, 1998; Klak, 1998). While efforts at fiscal austerity are indeed sensible, the timing and speed with which the IMF imposed these conditions on countries often had the opposite effect and created political crisis for governments as their citizens bore the brunt of rising costs, fewer public services, a decline in the productive capacity ofthe economy, and a resultant deterioration in the quality oflife for a vast majority ofthe population. The initial fiscal austerity measures had a negative effect on agricultural production for the domestic market as cuts in government spending gutted agricultural research, development, and extension services (Weis, 2004), effectively reversing the programmes created during the Plantation School era (Deep Ford & Rawlins, 2007). IMF policies, concerned about inflation, raised domestic interest rates to such a high degree, from 20- 40 percent, that neither businesses nor farmers were able to obtain capital for productive investment (Stiglitz, 2003). However, in what was termed the Washington Consensus and is now commonly referred to as neoliberalism, the IMF went beyond its stated mission of maintaining global economic stability through fiscal' austerity and included conditionalities promoting the ideology of laissez faire economics through privatisation and trade liberalisation. Claiming Caribbean economies were stifled by the inefficiencies of protectionism implemented during the era of the Plantation School's influence, the neoliberal agenda believed liberalised trade based dn comparative advantage would create competitively efficient economies and raise global wealth with trickle-down benefits for all (Stiglitz, 2003; Weis, 2004). Begun in the 1980s, and accelerated in the 1990s, publicly-owned enterprises were privatised and protectionist trade policies scaled-back in the indebted countries. The reduction of subsidies and trade barriers sought to create an environment whereby highly competitive producers excel while those less productive would be assim­ ilated into other competitive sectors of the economy. Domestic agriculture in the Caribbean proved to be at a disadvantage competitively when pitted against the industrialised agricultural sectors of North America and Europe - which were protected and supported by the very trade barriers and subsidies the neoliberal agenda derided. Any concerns about food security were answered with the availability of cheap and (assumed) stable imports, which stands in stark contrast to the theories ofboth Lewis and the Planta- I' tion School. The acceptance of this food security strategy has even contributed, to the decrease in the proportion of foreign assistance devoted to agricultural deveiopment; from 18 percent of assistance budgets in 1979 to 2.9 percent in 2006 (Walt, 2008). Critics have warned that relying on cheap imports is a short-term strategy whereby once agricultural subsidies in the North America and Europe are eased the cost of imported food would rise accordingly (Weis, 2004). In the meantime nations lose domestic producers, creating increased unemployment and a populace less able to afford any rise in costs. The recipient ofthe Nobel Prize in Economics, Joseph Stiglitz, pointed out this failure: 'Trade liberalization is supposed to enhance a country's income by forcing resources to move from less productive uses to more productive uses; as economists would say, utilizing comparative advantage. But moving re­ sources from low-productivity uses to zero productivity does not enrich a country, and this is what happened aU too often under IMF programmes'. (Stiglitz, 2003: 59, italics in original). In the Caribbean, cheap food imports have flooded domestic markets, damaging the increasingly unprotected and unsubsidised local agricultural sectors and biasing domestic tastes toward foreign goods while leaving the region vulnerable to the vagaries of the international market (Timms, 2006; Deep Ford & Rawlins, 2007; Weis, 2004; Iqbal, 1993). Just such a scenario victimised the Jamaican dairy industry when structural adjustment programmes in the I990s liberalised importation of subsidised powdered milk from the United States and Europe. Domestic milk production dropped from 38.8 million litres ofmilk in 1992 to 14 million litres in 2007, the lattelj representing only 10 percent ofthe milk consumed on the island (Myers Jr., 2008). I" Proponents of trade liberalisation acknowledged that while local dairy farmers suffered, 'poor children could get milk more cheaply' (Stiglitz, 2003: 5). Yet this qualification overlooks the fact that a decline in a country's productive capacity makes it more difficult for the poor to escape poverty. Further, the forewarnings of Weis (2004) became a reality when the European Union lowered export subsidies for milk which, in combination with the rise of demand in China and India, resulted in the price of an imported metric ton of powdered milk to increase from US$2,200 in 2006 to over US$5,000 in 2008 (Myers Jr., 2008). In response to the scarcity of milk on the shelves of supermarkets the Government of Jamaica has announced plans to import dairy cows and begin the rebuilding of the domestic dairy industry. For the Caribbean region the effects of neoliberalism have seen a growing agricultural trade deficit due to low prices for export commodities and an increasing food import bill (Table 1) (Thomas, 1993; Deep Ford & Rawlins, 2007; World Bank, 2008). The increasing reliance on imports and damaged productive capacity of the domestic agricultural sector make the region even more susceptible to volatility in global commodity markets. Further, trade liberalisation has resulted in a decline in tariff revenues, which have traditionally been a significant source of revenue for Caribbean governments (Khaira & Deep Ford, 2007; Witter, 2004). Critics of the macroeconomic 'one size fits all' approach of neoliberal structural adjustment programmes point out the lack of historical and local context in the focus on short-term balance of payment difficulties and trade liberalisation without due regard to the severe long-term negative impacts they have on balanced development (Klak, 1998; Stiglitz, 2003; Karagiannis, 2004; Weis, 2004; Conway & Timms, 2003). In addition, neoliberal policies have been asymmetrically applied whereby the industrialised countries of North America and Europe retain subsidies and trade barriers while developing countries are forced to dismantle their own in the name offiscal austerity and liberalised markets. This creates unfair trade that undermines the comparative advantage of farmers in the Caribbean on both the global and domestic levels (Conway & Timms, 2003). Further, it denies the fact that development in the industrialised countries began with protectionism and only opened up to free trade, albeit selectively and incompletely, once their industries were in an advantageous competitive position (Deep Ford & Rawlins, 2007; Stiglitz, 2003). Hence, the imposition of neoliberal policies has placed the horse in front of the cart, increasing the economic instability and vulnerability of Caribbean nations. The results of neoliberal policies for the Caribbean are reminiscent of the colonial era when the British adopted free trade and reinforced the negative aspects of the plantation economy. Even the unequal power relations between the colonial metropole and colony are perpetuated in the uneven terrain of 'fair trade' whereby agricultural sectors in the Caribbean are left without support financially, technically, or protectively, and opened up to compete with imported

#### Coloniality of power is embedded in a system that is a remnant of the plantation economy – moving past this logic is the only way to resist

Perrey 13 [(Shoshana Devry, National Science Foundation Graduate Research Fellow who has field research experience in tropical ecology and agriculture) “Food Sovereignty: A Critical Dialogue” INTERNATIONAL CONFERENCE YALE UNIVERSITY, Conference Paper #52, Sept 14-15] AT

The coloniality of power thesis recognizes that a Eurocentric perspective of racial differences has endured as one of the dominant underlying causes of regulatory and social power in the Americas. Power is anchored in the European way of state making and was reproduced through the categorization of people into labor groups, based upon the simplified terms of ‘black’ and ‘indian’, rather than ‘Mandé’ or ‘Aymara’ respectively speaking1 . People were deprived of their ancestral heritages in order to decrease their social agency, and force them into slavery for the production of material goods sold on the European controlled market. Although heterogeneous ethnic groups spanned across the Americas, Caribbean and Africa, European elites bundled them into a few homogenous groups in order to classify them for for mass labor exploitation. The coloniality of power made way for the European, capitalist rationality to exert greater dominion over people, their labor, and their land. (Quijano 2000) The conquest of territory now referred to as Latin America resulted in colonies being formed by satellite monarchies ruling over appointed leaders, who used racial authority over workers to produce agricultural good and sundries for the European market. Centuries into the conquest, the category of ‘white’ emerged to denote Europeans. Up until the early 1800’s, Europeans were still identified by their class, their region of origin, and their national patronage. With the shift from colonies to independent states, a distinct coloniality of power came to dominate, whereby the legacy of Eurocentric state formation transitioned from European colonial rule to so-called independent state rule. Although new countries formed under the auspice that they were liberated from colonial ties, several major characteristics of newly formed states were duplicative of colonial pasts: plantation agriculture and the development of large estates, the expansion of the Catholic church, capital accumulation in the hands of the bourgeoisie and elites of partial or full European descent, dispossession of indigenous people’s land and their consequential impoverishment and labor exploitation. Thus, integral to the understanding of current food justice and food sovereignty activism is a history of plantation development, dependence upon racial categories and the coloniality of power embedded in food production.

#### Neocolonial strategies of dominance are part of a genocidal zero-sum logic that reproduces global hierarchies and provide the groundwork for unending cycles of violence

Kelly 10 [(Kieran, Mendeley member in Humanities interested in war, genocide, international relations, US foreign policy; Master's in History from Massey University in New Zealand; Author of blog On Genocide) “US Neocolonialism” On Genocde, No date, April 2010 is last date cited] AT

The third point about US neocolonialism relates to age-old imperial practices of divide and rule. When choosing native proxies, a practice essential in direct as well as indirect rule, imperial powers ensure that to the greatest possible extent those chosen have interests which clearly differ from those of the general colonised population. They exploit class, caste or religious differences, producing either sharply stratified pyramidal hierarchies, or a more simple structure of a narrow elite differentiated from a broadly equal subjugated populace. In India the British deepened and reified social stratification to induce general economic dependence (necessitating the broad immiseration and suffering of the majority and causing millions of otherwise preventable deaths in times of drought)7 while simultaneously elevating a handful to legendary levels of wealth,8 but ensuring their dependence on a system underwritten by British military power.9 In Rwanda and Burundi a dominant caste was created, or at least reified in racial terms, virtually from scratch.10 In the Philippines first the Spanish and then the US worked through a landowning and comprador11 class whose material interests were antagonistic to those of the majority.12 Landlords are very popular with empires; in India, Iraq, Southern Africa and elsewhere the British, at various times in a span of centuries, systematically transformed communal lands into private property and gifted despotic political authority and ownership to 'traditional' tribal or religious leaders whose very survival would soon become dependent on continued British dominance.13 For European imperialism at its height in the 19th Century, stratification was invariably produced and maintained through racist, social Darwinist and Malthusian ideologies. For Mark Levene this prerequisite of modern genocide is an inevitable extension of the quest for rationality and order symptomatic of modernity, but there was also an economic facet: 'Enlightenment wisdoms by which the world at large is supposed to be made a better, healthier, more productive and, one might crucially add, more efficient place. Modernity’s positivist meta-narrative of progress, thereby, logically links back to the economic requirements of a Western world order.'14 Once again this contains an orthodox Orwellian reversal of the truth. As Davis documents, such policies actually caused the collapse of efficient systems of exploitation bringing about environmental degradation and a negative impact on efficiency that outweighed the positive effects of technology transfer for the better part of a century.15 As with the similar policies of neoliberalism (discussed below) the real impacts were in the growth in imperial profitability (which is in no way the same thing as a growth in productivity) and, more to the point here, in extending state power by destroying the independence of a peasantry that could previously enjoy economic security through subsistence and other informal economic practices. In neocolonialism, racist ideologies are masked somewhat, but the love of stratification persists. For clients the US may often choose the established latifundistas16 of the traditional imperialist. Galeano descibes the role of the latifundia: 'Subordinated to foreign needs and often financed from abroad... the present-day latifundio [is] one of the bottlenecks that choke economic development and condemn the masses to poverty and a marginal existence in Latin America today. ... [I]t merely needs to pay ridiculously low or in-kind wages, or to obtain labor for nothing in return for the laborer's use of a minute piece of land.' 17 Simultaneously, however, the US has shown a preference for two other forms of client oligarchy – kleptocracy and militarised authoritarianism. These are not exclusive categories, with many regimes embodying all three.

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Dependence is a renewable state, but again, although not unambiguous, events in Iran seem to lend themselves towards an interpretation of neocolonialist dependence as primarily a mode of imperial domination and secondarily (though sometimes inseparably) involving the extraction of surpluses for the enrichment of the private interests of the imperial centre. There are two ways of testing the primacy of a concern for power over that of the concern for material gain. The first is whether the empire is willing to sacrifice profit for power, and the second is whether, when unable to extract resources and wealth, the imperial power maintains or deepens the position of disparity by destroying those resources and wealth, thus embarking down the slippery slope into genocide. That material concerns were not the driving force behind the US hegemony of the Cold War era, is very well demonstrated by US actions in Indochina. Many have imputed an acquisitive neocolonial motive to the US in its intervention in Indochina,83 not least their Indochinese enemies.84 On some level, however, the opponents of the US seemed able to escape the confines of such thinking. Although the Vietnamese insurgency began by targeting commercial interests,85 they soon desisted. Ironically, a dogmatic exaltation of the ideology of socialism as something concrete that the US wished to crush, seems to have allowed communists to better understand US actions as being based on power.86 After all, the US never showed any particular inclination to protect the rubber resources which they were putatively there to exploit, while, by their actions, they showed a considerable inclination to destroy them with explosives, incendiaries and defoliants. This, as much as the human cost, seems the reason that the pro-war anti-communist French writer Bernard Fall became so distraught with US actions by 1967, when he wrote: 'Vietnam as a cultural and historic entity... is threatened with extinction... ...the countryside literally dies under the blows of the largest military machine ever unleashed on an area of this size.'87 One of the striking things about the Second Indochina War, which has been echoed in the Iraq War, as will be discussed at length, was the fact that the US disingenuously courted support from its own business community by promising immense possibilities for making profit.88 In the event, however, the US created an environment where profitmaking was impossible except for those who contracted to provide war related goods or services to the US government. Those companies that did make very handsome profits included not only arms manufacturers, but infrastructure companies such as Bechtel and Halliburton, and chemical companies such as Dow and Monsanto, and other civilian contractors who were allowed to operate under conditions which amounted to legalised corruption where 'money [could] be multiplied without producing anything.'89 Ultimately this money came not from the plunder of Indochina, but from the US taxpayer. What I am suggesting is that at the most fundamental level the US was working on a global zero-sum strategy which made it perfectly rational to sacrifice its material interests in return for a more than proportionate loss for the enemy (remembering, of course, that the massive extant material disparity gives the US the luxury of a much greater material loss in absolute terms). In such circumstances it makes perfect sense to simply destroy a country without attempting to seize permanent control of it. Indeed, in Indochina, until after the end of the Second Indochina War, the US did not have any modalities of control that could have functioned without the ongoing conflict, but in contrast, after the US having 'lost', the US controlled Bretton Woods institutions are now able to dictate or influence every economic policy decision in the Indochinese states. Some analysts see the adoption of market liberalisation in Vietnam as demonstrating the ultimate victory of the US. Chomsky called Vietnamese poverty 'a vivid refutation of the claim that the US lost,'.90 Nigel Cawthorne cites such reasoning as the logic behind his title – Vietnam: A War Lost and Won.91 In other words, through 'losing' a war the US created a similar state of affairs in Indochina as its coups in Iran and Guatemala had effected.

### Poverty Advantage

#### Advantage 3 is poverty

#### Industrialized agriculture causes devastating famines and destruction of farmers’ livelihoods – the question is not one of yields, but allocation – while the developed world faces food oversupply, millions around the world starve to death

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

5. Globalisation and the creation of hunger Agribusiness is harvesting both the stocks and agricultural subsidies to gain through agricultural exports. The same companies that gained through deregulated imports are now also gaining through deregulated exports. Millions of Indians go to bed hungry, as the government has dismantled the PDS system, and taken affordable food out of the reach of millions. Foodgrain export is liberalisation’s answer to the problem of ‘‘over-procurement’’ from farmers while it will bring in much needed foreign exchange. However, ever since Indian agriculture was subjected to liberalisation, both the share of agriculture exports in India’s total exports as well as their value in hard cash has actually declined. The share of agricultural exports in India’s total exports declined from 20.33% in 1996–1997 to 18.25% in 1998–1999 and further to 14.04% in 2001–2002 (Table 1). 5.1. Foodgrain exports did not benefit the national exchequer Each period of large exports has been followed by acute food shortage, and India has had to import the same grain again, often at higher prices. For instance, India exported 2.5 lakh tonnes of wheat during 1987–1988, followed by an import of 18 lakh tonnes in 1988–1989 [17]. 5.2. Foodgrain exports did not benefit the farmer Wheat exports had an inflationary impact on domestic prices, although this did not benefit the farmers, as during the harvesting period the prices are kept low, and even MSP rates are not enforced. 5.3. Foodgrain exports: Redirecting subsidies from farmers to traders The push towards exports is neither aimed at helping farmers or the nation’s finances; rather, in accordance with the impetus of WTO’s Agreement on Agri- culture, it is a way of diverting support away from farmers towards traders. While the government dismantles procurement and public food distribution because they are considered subsidies to the people of the country, and are supposed to distort trade, it allows traders to buy bulk grains from its go downs at prices even lower than those offered to the poorest of the poor. Moreover, the annual budgets since liberalization having been adding to the subsidies for the corporate sector–tax holi- days for building silos and cold storages, incentives for exporting, subsidized trans- portation to the ports of the traders’ choice. The experience of the 2001 wheat export, for instance, reveals this. As against an economic cost of Rs 8300 per tonne to the FCI and an open market price of Rs 7000 per tonne, India was offered a price of Rs 4300 per tonne in international market in May 2001. The government allowed FCI to charge any price for exports, as long as it is not below the below poverty line’ (BPL) rate. In this scenario, Cargill has emerged as the biggest buyer of subsidised wheat being pushed by India into world markets [17]. The offtake price of wheat for export has also been allowed to far below the BPL price of Rs. 4150 per tonne, to Rs. 3960 per tonne. At the same time, it has increased the above poverty line’ (APL) issue prices of wheat to Rs. 610 per quin- tal, and for rice to Rs. 830 per quintal. This price increase will only ensure that PDS offtake will be even lower, so that buffer stocks for exports will be maintained [17]. Globalisation, as directed by the World Bank/IMF structural adjustment programmes and the WTO has seen a return of famine. The intensification of hunger over the last five years, even while grains are overflowing from the godowns can thus not be attributed to drought and climatic conditions alone, but to the policies that govern people’s access to food. The policy changes have consistently attempted to decrease the government’s role in ensuring food security and livelihood security for farmers in particular by calling measures meant to aid people as ‘trade distorting’ and demanding that these be scrapped. The anomaly of the co-existence of burgeoning food stocks and mass starvation is today, as in the late 19th century, the direct consequence of trade-driven agricultural policies. The 1877 Deccan famine killed over a million people; the trade liberalisation of the last decade of the 1990s has seen India step into the new millennium with over 50 million starving people and millions more with drastically decreasing access to food.1 An obvious example of the policy shift from people centred concerns to trade- and corporation-centred concerns is the fact that while farmers are not allowed by law to take their produce beyond their state borders, traders can pick them up any- where and take them anywhere. In fact, the government is building super high- ways, after forcibly taking away land from farmers and communities to connect centres of agricultural production to airports and ports, so that corporations can quickly transport these commodities for export. The policy changes induced by trade liberalisation include: dismantling the Food Corporation of India (FCI) and reduce its role in procure- ment from farmers; . removal of QRs on imports of food and agricultural products; . the amendment of the Public Distribution System, to cater only to the BPL cate- gory of the population; . increase in the central issue price, from Rs. 450/quintal in April 1995, to Rs. 682 quintal in April 1999, and to Rs. 900/quintal in 2000; and . increased price of food available through the targeted PDS to the BPL as a result of transferring 50% of the procurement and distribution costs of the government to this category. These changed policies have had disastrous impacts for both farmers and con- sumers. 5.3.1. Farmers . Government procurement centres refusing to purchase foodgrains from farmers. . The refusal of the government to enforce MSP on private traders and corpora- tions, forcing farmers into distress sale of foodgrains at far below production costs. . Dumping of cheap, subsidised agricultural products by other countries in the Indian market [5]. . Increasing price of farm inputs, including seeds [14]. . Liberalising seed regulations to allow private seed companies sell uncertified seed [11]. . Deepening of farmers’ debt, increased mortgages and land alienation, increased destitution, suicides and sale of body parts among farmers. The prosperity that globalisation was suppose to spread is fast proving to be elusive. Trade liberalisation and globalisation has resulted in thousands of farmers sacrificing their lives and livelihoods. In fact, the most prosperous state, also called the breadbasket of India, Punjab, has left behind Andhra Pradesh in the notorious distinction of farmers’ suicides [14]. 5.3.2. Consumers . Massive reduction in the number of people accessing food from the targeted PDS due to the inability of the government to identify the BPL category of people. . Inability of the majority of even the few BPL identified to purchase food-grain from Fair Price Shops due to increased prices. . Drastic increase in food prices—by over 60% since the initiation of trade liberal- isation measures, and over 200% in commodities like pulses.2 Reduced PDS off- take by states due to increased issue prices. The shift from PDS for all to Targeted PDS was justified on grounds of reducing government expenditure. However, with trade liberalisation, the PDS costs to government have risen from Rs. 5,166 crores in the mid 1990s to Rs. 9300 in 1999– 2000.3 While the government blames farmers for this increased expenditure, the primary reason is the increased cost of food to consumers as a result of policy changes, resulting in a drastic decline in purchases from the Fair Price Shops. 5.4. Declining food production Export-oriented agricultural policies that push the small farmer to destitution on the one hand, and promote cash cropping on the other, have resulted in a steady decline in food production since the early 1990s. The collapse of domestic support for food production (through dismantling the MSP, rising costs of inputs, crop failure due to uncertified seeds) in the late 1990s has intensified this shift, as farm- ers are desperate to recover their losses. For instance, there has been a decline in food production to the order of 12.8% in just one year, 2000–2001 [7]. 5.5. Declining food consumption A major impact of trade liberalisation policies has been a general lowering of food consumption. The per capita cereal consumption has declined from 17 kg per capita per month in the 1950s to 13.5 kg per capita per month in the 1990s [5]. The National Nutrition Monitoring Bureau 1997 data shows a declining trend in consumption in rural India, particularly in cereal and millets, the main source of energy for the poor, from 1990–1995. The National Sample Survey (NSS) rounds starting from the 38th round have documented the decline in cereal consumption 1992, following the implementation of SAPs.4 The most important reasons for the decline are: rising food prices, destruction of livelihoods, destruction of the PDS system and shift to export oriented crops. The reduced consumption on the one hand, and decline in production and pro- curement on the other are directly linked though the food and agricultural policies of the government. Colonialism had destroyed the food sovereignty of the country, forcing changes in cropping from food for local and regional food security to commercial crops. Rice particularly had become a commercial crop even within the country. The emphasis on foreign trade had resulted in large scale famines in the country, forc- ing Cornelius Walford to comment in 1879 in The Famines of the World—‘‘it is an anomaly that, with her famines on hand, India is able to supply food for other parts of the world’’ [5]. Following independence, the Government’s priority was to ensure that farmers would produce food and thus government procurement (to ensure both that farm- ers produced food, and got just price for it) and the public distribution system (to ensure that consumers got adequate food at affordable prices) were designed. The need for government involvement in food production and distribution became even more necessary with the Green Revolution that firstly, destroyed regional food security based on diverse cereals and replaced it with just wheat and rice; secondly, concentrated the production of these cereals in just two states—Punjab and Haryana—and thirdly, forced the farmer into the vicious treadmill of costly input (seeds, chemicals water) intensive agriculture.

#### [not sure if I need this card] This applies more generally to developing countries – no alternative besides domestic agriculture can solve poverty – this requires shifting away from monocultures

Gonzalez 7 [(Carmen, Fulbright Scholar in Argentina, a Visiting Fellow at Cambridge University in the United Kingdom, a Visiting Professor at the Hopkins-Nanjing Center in Nanjing, China, Chair of the Environmental Law Section of the Association of American Law Schools) “Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens” A Center for Progressive ReformWhite Paper April 2007] AT

Hunger in the developing world is often exacerbated by unsustainable farming practices that degrade the natural resources necessary for food production.43 Chemical-intensive, monocultural farming practices have triggered a wide range of environmental problems in both developed and developing countries, including diminution of agricultural productivity, soil degradation, contamination and depletion of freshwater reserves, and loss of biodiversity.44 Environmental degradation in developing countries has also increased poverty, provoked mass migrations, intensified racial and ethnic tensions, and incited violent conflict over dwindling access to vital natural resources.45 In order to understand the underlying causes of undernourishment and environmental degradation in the developing world, it is necessary to begin with four key propositions. First, contrary to popular misconception, hunger is not a function of food scarcity. Based upon economist Amartya Sen’s pioneering study of famine46 and on the World Bank’s influential 1986 report on world hunger,47 it is now widely accepted that lack of access to food rather than inadequate supply is the primary cause of hunger.48 Indeed, food production world-wide has kept far ahead of population growth for the last several decades,49 and many of the developing countries experiencing chronic undernourishment are net food exporters.50 People go hungry because they are poor – because they lack the resources with which to grow or purchase food.51 Consequently, efforts to solve the problem of hunger in the developing world must target poverty and inequality. Second, poverty and undernourishment in developing countries are concentrated in rural areas.52 Approximately 75 percent of the poor in the developing world are rural dwellers.53 Most are small farmers whose livelihoods depend on selling their agriculture output.54 Thus, policies and programs that provide food to developing countries free of charge or at subsidized prices may exacerbate hunger by depressing agricultural commodity prices and depriving poor farmers of the income needed to pay taxes and to buy vital consumer goods not produced on the farm.55 Third, economic diversification and industrialization are essential to poverty alleviation and to the promotion of food security.56 A food-secure country is one that can grow, import, or obtain as aid the food necessary to meet the needs of its population.57 The most food-insecure developing countries are those that rely on a small number of primary agricultural commodities to finance the importation of food products and manufactured goods.58 Poor harvests, fluctuations in world market prices for agricultural products, and the declining terms of trade for agricultural commodities vis-à-vis manufactured goods can interfere with the ability of these countries to purchase food and other essential items in international markets and can deprive these countries of export earnings needed for productive investment.59 According to the U.N. Food and Agriculture Organization, as many as 43 developing countries in sub-Saharan Africa, Latin America and the Caribbean depend on agricultural exports for over half of export revenues and depend on a single agricultural commodity to generate over 20 percent of total foreign exchange earnings.60

#### The best empirics confirm that it causes massive poverty and starvation

Gonzalez 7 [(Carmen, Fulbright Scholar in Argentina, a Visiting Fellow at Cambridge University in the United Kingdom, a Visiting Professor at the Hopkins-Nanjing Center in Nanjing, China, Chair of the Environmental Law Section of the Association of American Law Schools) “Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens” A Center for Progressive ReformWhite Paper April 2007] AT

The Green Revolution was an immense success from the standpoint of food production,76 but it exacerbated hunger in the developing world by aggravating poverty and inequality.77 First, the Green Revolution was inherently biased against poor farmers in developing countries because the new seeds only produced high yields in response to the application of expensive inputs unaffordable to many farmers, including synthetic fertilizers, chemical pesticides, and irrigation systems.78 Second, the increase in food production resulting from the Green Revolution depressed agricultural prices, and thus deprived small farmers in developing countries of the cash income necessary to purchase agricultural inputs, pay taxes, and purchase goods not produced on the farm.79 Many small farmers abandoned the land, and rural poverty and hunger increased.80 Indeed, one review of over 300 published reports on the Green Revolution concluded that 80 percent of these reports found that the Green Revolution aggravated rural poverty and inequality in developing countries.81 Third, the Green Revolution’s emphasis on increasing food production was often promoted as an alternative to land reform and other redistributive measures82 – the very reforms that have been credited in subsequent studies with poverty alleviation, rural development, and enhanced food security in the developing world.83 The pauperization of small farmers in the developing world was exacerbated by United States Public Law 480 (the so-called “Food for Peace Program”),84 which depressed agricultural prices in developing countries by making U.S. surplus agricultural production available to developing countries at reduced prices or free of charge as food aid.85 Furthermore, farmers in the developing world were harmed by the lavish agricultural subsidies maintained by the United States and other industrialized countries (which placed additional downward pressure on world agricultural commodity prices) and by the tariff and non-tariff import barriers that impeded developing country farmers from obtaining access to developed country markets.86 In sum, the Green Revolution, Public Law 480, and the subsidies and import barriers maintained by the United States and other industrialized countries increased hunger in the developing world by depressing food prices, rendering small farmers destitute, and depriving developing countries of badly needed export earnings.87

#### Billions are dying in what can only be described as a global apartheid. The fact that this is a direct result of Western imperial policies creates a moral obligation to correct global injustice even absent a framework.

Ruz 2000 [(Dr. Fidel Ruz, President of the Council of State and Council of Ministers of the Republic of Cuba) “Global Economic Apartheid” Speech given at the International Conference Center, Havana, Cuba, April 14, 2000] AT

Every single speaker alluded to the debt tragedy that limits our resources for economic and social development in a thousand different ways. There was practically unanimous agreement on the view that the benefits of globalization extend to only 20% of the world’s population, at the expense of the other 80%, while the gap between the wealthy countries and the marginalized world grows increasingly wider. There was also a unanimous approach to the need for a transformation of both the United Nations and the international financial system. One way or another, every delegation expressed the view that unequal and unfair trade is decimating the Third World’s export revenues through tariff and non-tariff barriers that deprive it of the minimum amount required to pay off debts and achieve sustainable economic and social development. Equally unanimous was the complaint that scientific and technical development, currently monopolized by the privileged club of wealthy countries, remains beyond our reach, for it is the wealthy countries that control the research centers, hold almost 100% of patents, and increasingly hinder our access to know-how and technology. Quite a few leaders of the South took it upon themselves to remind us of something that is barely mentioned in the manuals on neoliberal policies and economics: the shameless theft of the most highly qualified minds of the Third World. The North countries are appropriating them because the South cannot offer enough research centers, and much less the high salaries that draw these minds to the consumer societies, which did not spend a penny on training them. In addition, many of the outstanding youths from the Third World studying at 3 universities in the former colonial powers or other wealthy countries do not return home after graduation. Many of our world leaders used really overwhelming figures and statistics to reflect the sum total of accumulated financial obligations and the brutal mockery at dozens of the poorest countries of which only four have been targeted for a slight relief. There is a clearly resounding clamor for the Third World’s debt to be considerably reduced if it cannot be completely cancelled, which is what would be most fair and equitable for the peoples who have paid it off many times over in the course of centuries past and present. Many of our colleagues have addressed the need to establish fiscal obligations on various activities in order to finance development. Cuba has sustained, and steadfastly insists, that a 1% tax on all speculative operations would suffice to finance the development of the Third World. Pay no attention to those who claim that it would be impossible. The technical resources and know-how currently available would make it perfectly possible. When one hears the participants at this Summit describe the billions of people who receive less than two dollars, less than one dollar or only a few cents with which to survive, one might come to believe that our planet is devoid of even the slightest sense of humanity. Nobody could have imagined that after the century of the revolution for liberty, equality and fraternity over 200 years ago, the century of accelerated industrialization that followed or that of great breakthroughs in communications, science and the productivity of human labor, which has just come to an end, we would be discussing the hundreds of millions of people who are going hungry, malnourished, illiterate, unemployed and suffering from disease, in addition to the colossal numbers of children who are undersized or underweight for their age, who have no access to schools or medical care, or who are forced to work at grueling and low-paying jobs, not to mention infant mortality rates that are 4 sometimes over 20 times higher than in the wealthy nations. These are the permanent human rights reserved to us. Fixed in our memories, as a symbol of our era, is the figure of 36 million people in the world infected with AIDS, of which 26 million live in the African continent, as indicated by the Secretary General of the United Nations; medical treatment for them would require 10,000 US dollars per person per year. And, in the next twelve months, another six million newly infected people will engross this figure. Why do all of these happen? How much longer will it last? One way or another, practically everyone here expressed their expectations about this Summit. Never before had I seen such awareness. Let us hope that we are as aware of our combined strength as we are of the pettiness and the injustices we suffer. Perhaps in the future people will speak in terms of before and after the first South Summit. It is up to us to make it happen. People used to talk about apartheid in Africa. Today, we can talk about apartheid throughout the world where more than four billion people are deprived of the most basic rights of human beings: the right to life, to health, to education, to clean water, to food, to housing, to employment, to hope for their future and that of their children. At the rate we are going, we will soon be deprived even of the air we breathe, increasingly poisoned by the wasteful consumer societies that pollute the elements essential for life and destroy human habitat. Natural disasters like those that have affected Central America, Venezuela, Mozambique and many other countries -- almost all of them in the Third World and all in the course of barely 18 months-- 5 were completely unprecedented in the 20th century. They took the lives of thousands of people. These are the consequences of climatic changes and the destruction of nature and the blame cannot be laid upon those of us gathered here to fight not only for universal standards of justice but also for the preservation of life on the planet. The wealthy world pretends to ignore that slavery, colonialism and the brutal exploitation and plunder to which our countries were subjected for centuries are the causes of underdevelopment and poverty. They look upon us as inferior nations. They attribute the poverty we suffer to the inability of African, Asian, Caribbean and Latin American peoples, that is, of dark and yellow skinned, indigenous and mixed-race peoples to achieve any degree of development or even to govern ourselves. They speak of our flaws as if it were not they themselves who impregnated our pure and noble ancestral peoples with the vices of the colonizers or the exploiters. They also pretend to ignore that when Europe was populated by those whom the Roman Empire called barbarians, there were civilizations in China, India, the Far East, the Middle East, and north and central Africa that had created what are still known today as World Wonders and that had developed written languages before the Greeks learned to read and Homer wrote The Iliad. In our own hemisphere, the Mayans and pre-Incan civilizations had attained knowledge that still today continues to astound the world. I am firmly convinced that the current economic order imposed by the wealthy countries is not only cruel, unjust, inhuman and contrary to the inevitable course of history but also inherently racist. It reflects racist conceptions like those that once inspired the Nazi holocaust and concentration camps of Europe, mirrored today in the so-called refugee camps of the Third World, which actually serve to concentrate the effects of poverty, hunger and violence. These are the same racist conceptions that inspired the monstrous system of apartheid in Africa.

### Solvency

#### But the deficits of the current system provides its vulnerability to change – amidst the current food crisis a shift to a new system is now possible

Timms 8 [(Benjamin F. Timms, Social Sciences Department, California Polytechnic State University) “Development theory and domestic agriculture in the Caribbean: recurring crises and missed opportunities” Caribbean Geography 2008 15(2)] AT

If one can find the proverbial silver lining to the current global food crisis it may be the incentive for Caribbean nations to, once again, combat the colonial legacy of the plantation economy. With rising prices there is an incentive for farmers to recover domestic markets, which were lost during the era of trade liberalisation and unfair competition from industrialised and subsidised foreign agriculture (Weis, 2007; IFAD, 2008). Such situations have presented themselves before, notably during the oil shocks ofthe 1970s when the costs of imported agricultural inputs rose steeply. But attempts at increasing domestic production were defeated by trade liberalisation with cheap food imports replacing self-sufficiency in the short-term strategy of food security (Weis, 2004). Today that avenue appears to be closed and, if this is indeed a long-lasting structural crisis, then it may be the sustained incentive needed for a structural change to the plantation economy to finally succeed. One country which faced a severe crisis and proactively worked to transform the domestic agricultural sector is Cuba. Prior to the collapse of the Soviet Union in 1991, Cuba had a highly modernised agricultural sector dominated by sugar exports with a reliance on imported agricultural inputs and foodstuffs. When the Soviet Union disintegrated Cuba saw an immediate 53 percent decrease in oil imports, 80 percent decline in fertilisers and pesticides, 50 percent drop in imported grains, and a resultant 50 percent drop in calorific intake (Rosset, 1997: 21). The reaction was to institute the Special Period in Peacetime which switched from high-input agriculture to low-input self-reliant farming and a reorganisation oflarge state-farms to small work teams which could sell any surplus above their quotas in newly created farmers' markets, drastically raising production (Torres et al., 2007; Lynch, 2006; Rosset, 1997). Programmes were implemented focusing on biological pest and disease control, increased emphasis on energy conservation and renewable energy, the promotion of root and tubers to replace imported wheat, and urban agriculture. By mid-l 995 calorific intake had recovered to pre-crisis levels and today 90 percent of Hayana's produce is supplied by urban farms (Rosset, 1997; Stricker, 2007). While the massive public mobilisation required for Cuba to achieve this transformation is not necessarily transferable in total, many aspects of the programme have been promoted as a model for other countries in the Caribbean to follow (Weis, 2007). Examples o f similar efforts are being made throughout the Caribbean with public campaigns urging citizens to change eating habits toward local production (Richards, 2008; Thompson, 2008); including replacing imported wheat and rice with domestically produced yam and cassava(Wilson,2008). The Jamaican Ministry of Agriculture has initiated an Urban Backyard Garden Programme that provides free garden kits, aims to distribute 200,000 packets of vegetable seeds to students, and seeks to establish school gardens in 966 public institutions (Thompson, 2008). There is also discussion about utilising Guyana's vast agricultural potential to cooperatively produce rice for the region, although such talks have not yet approached any practical development (Richards, 2008). While not on the scale of the Cuban programme, these efforts do signal a response aimed at increased regional agricultural production to combat the global food crisis. There is also a fundamental shift in the global order which may serve as an alterna­ tive to the adverse impacts of neoliberalism. China, whose demand is one factor contributing to the rise in commodity prices, has become the world's largest money holder ($1.5 trillion in foreign exchange reserves) and has become a new source of foreign aid and development loans (Zakaria, 2008). China's aid packages often surpass those ofthe USA and its loan packages are competing with the World Bank and the IMF with lower interest rates and without the dreaded conditionalities (Zakaria,2008). While these financial packages are being used politically to create state support for the One-China policy, the lack of IMF type conditions can give developing countries more leeway in determining their own development agendas (Sanders, 2008). Evidence ofthis shift in funding can be seen throughout the Caribbean (Manian, 2005) and, notably, in a Chinese grant of $2.5 million for agricultural development in Jamaica that is in the process ofbeing fmalised (Richards, 2008). However, while the current global food crisis provides an opportunity to increase domestic agricultural production, the rise in commodity prices also creates an incentive that may perpetuate the legacy of the plantation economy. If the demand for ethanol continues to increase it may promote expansion ofthe sugar industry. While it would be prudent to take advantage ofthe profits ofsuch an endeavour, it would be folly to waste them on importation offoodstuffs. Hopefully the historical lessons from the past devel­ opment theorists such as Lewis and the Plantation School will be heeded and the profits earned from the expansion of sugar for ethanol reinvested in domestic agriculture, promoting long-term resilience in food security through growth in small-holder production (IFAD, 2008; United Nations, 2008). For example, the rise in cost of imported food may drive the tourist sector to seek domestic sources, which has historically suffered from lack ofsupply (Timms, 2006). By reinvesting in domestic agricultural production this limitation may be remedied. Further, reinvestment in other export crops can spur diversification, particularly in niche markets where product differentiation is more important than price (e.g. fair trade items). Ifso, the opportunity that crisis provides may finally allow development to spread from sector to sector and break the legacy of the plantation economy. Conclusion: time for action...again By examining the historical role o f domestic agriculture in Caribbean development theory this paper highlights how recurring crises have provided opportunities to challenge the structural legacy of plantation economies. In the late nineteenth century falling sugar prices from free trade induced competition prompted the British Royal West Indies Com­ mission to recommend the promotion of small peasant farms producing for the domestic market. In the post-World War II period Sir Arthur Lewis elaborated the importance of expanding domestic agriculture to shore up foreign exchange leakages and achieve bal­ anced development. The Plantation School was able to implement policies supportive of domestic agriculture during the rise in import costs resulting from the 1970s energy crisis. While the latter two theorists were often at odds with each other, they concurred on the need for investment in the productive capacity ofdomestic agriculture to spread develop­ ment from sector to sector and to combat the leakage ofcapital through adverse terms of trade, which would effectively break the legacy of the plantation economy. Unfortunately, while crises provided opportunities to achieve this long sought after goal, in large part the attempts to do so were unsuccessful. Whether it was internal resis­ tance to the shifting of resources from plantation to domestic production by the entrencheq plantocracy, external resistance by colonial powers seeking to maximise trop­ ical crop exports, or more recently imposed neoliberal policies damaging domestic production, these brief windows of opportunity were missed. Once again opportunity presents itself, and if the current global food crisis is indeed as long-term and structural as the World Bank believes then it may provide a sustained incentive to finally achieve lasting development of the domestic agricultural sector. There is no time like the present to become proactive instead of reactive and heed the lessons ofhistory by taking advan­ tage ofthis opportunity and make domestic agricultural a central component of balanced development in the Caribbean.

#### Either we shift systems now or risk total collapse – justice demands reforms

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

6. Creating a hunger free, suicide free India: an agenda for the future of food The future of food and agriculture in India appears dismal under the rules of globalisation which promote corporate control. The corporate future will ensure that landlessness will grow, farmers will be transformed from owner-cultivators to serfs controlled by contracts, seed and water will be the private property of global corporations who will sell it at high cost to farmers. In the future based on WTO rules, hunger will grow, and governments will fail to guarantee their people the right to food and their farmers the right to food sovereignty. But this future is not inevitable. Other futures are being created, based on alternative principles and practices which will over time bring policy shifts. 6.1. Principles and policies for the future of food (a) Food sovereignty and food security Every person, every community, every country has a right to be able to produce to food or have access to food and to shape their food and agriculture economies. (b) Right to food is a fundamental human right Food is the first and foremost source of sustenance, and only a secondary commodity for trade. The Right to food is a fundamental right. (c) Right to livelihood security for farmers The right to work is a fundamental right. For peasants and landless work- ers, this translates into livelihood security in agriculture. (d) Right to land Land rights are central to food sovereignty. Land reforms interrupted or reversed by globalisation need to be reintroduced and made central to peace and security of the people. (e) Right to seed/farmers’ rights Farmers are the first and last breeders. Farmers’ rights are collective rights based on collective, cumulative innovation. Farmers have a right to seed and to be free of seed monopolies. Biodiversity must be conserved and protected as a commons. Corporations are liable for seed failure and genetic pollution. The polluter pays’ principle must be applied to genetic contamination of crops and food. (f) Right to water as a public good/commons Right to water is a community right and a fundamental right. Farmers and communities have a duty to conserve and share water and manage it as a commons. The polluter pays’ principle must be applied to water pollution. (g) Sustainable production Sustainable agriculture is good for the environment, conserves biodiversity and water, and reduces costs of production for farmers. In terms of overall output, it has higher productivity. (h) Decentralisation Decentralisation is becoming an ecological economic and political necessity. Climate change is making centralised resource systems, which contribute to greenhouse gases, more vulnerable to breakdown. Centralisation in the hands of a few corporations is also responsible for exploitation of farmers and col- lapse of farm prices. Decentralisation requires priority to localisation of mar- kets and distribution. (i) Diversity Biological diversity of farms and agro-ecosystems and cultural diversity of food systems and cuisines produces more, better and healthier food and richer cultures. (j) Food safety and food quality The industrialised globalised food system is creating food hazards and unhealthy foods. Food safety and food quality requires ecological production, decentralisation and diversity, instead of chemical production, centralisation and monocultures. (k) Small farms Small farms produce more livelihoods and more food than large industrial farms and manage resources more sustainably. The future of agriculture must be based on small farms and small farmers, who are the backbone of agri- culture. (l) Support and subsidies Support for agriculture is a food security imperative. Public support must be directed at sustainable production and a fair market, not for corporations and traders, toxic chemicals and GMOs and unhealthy food production. (m) Just and fair prices Agriculture prices are falling below survival levels to sustain small peasants and landless workers. Food prices are rising and taking food beyond the reach of the poor. A floor must be guaranteed to ensure just prices to farmers. A ceiling must be ensured to keep food accessible to the poor. (n) Just and fair trade Current rules of trade benefit corporations and destroy farmers. They pro- mote dumping and deceitful and forced trading. Trade rules must be rewritten to ensure food first, not trade first. Countries have a right to restrict imports, protect livelihoods and ensure food sovereignty. (o) Food not trade first Trade first policies have reduced food to a commodity, reduced agro-biodi- versity to 7 globally traded crops with a handful of corporations controlling input and trade. Food and nutrition need to be put first in agricultural policies.

#### Thus the plan: developing countries should implement programs to support organic agriculture. This involves a shift from industrial agriculture, which uses monocultural production by large corporations for exports, to sustainable agriculture, which uses organic farming techniques by small farmers for local consumption.

#### That’s key to effect a shift to small-scale, sustainable agriculture – 7 warrants

Hoffmann 11 [(head of the Trade and Sustainable Development Section at the secretariat of the United Nations Conference on Trade and Development, member of the International Task Force on Harmonization and Equivalence in Organic Agriculture, editor in chief of UNCTAD's annual Trade and Environment Review) “ASSURING FOOD SECURITY IN DEVELOPING COUNTRIES UNDER THE CHALLENGES OF CLIMATE CHANGE: KEY TRADE AND DEVELOPMENT ISSUES OF A FUNDAMENTAL TRANSFORMATION OF AGRICULTURE” UN Conference on Trade and Development Discussion Paper No 201, Feb 2011] AT

First of all, it is important to remove or modify the existing tax and pricing policies that generate perverse incentives for sustainable production systems, such as overuse of pesticides, fertilizers, water, and fuel or encouraging land degradation. There should be a policy shift towards significantly increasing the efficiency of fertilizer and agro-chemical use and their replacement by soil-fertility-enriching (and carbon- absorptive) production methods that rely on multi-cropping, integrating crop and livestock production and the use of locally available bio-fertilizers and bio-pesticides. As most developing countries import all or the majority of the fertilizers and agro-chemicals used, a drastic reduction of their consumption therefore not only benefits the environment, but also leads to a reduction of the import bill and agricultural production costs.62 In India, for instance, overall public expenditures on agriculture have remained at approximately 11 per cent of agricultural GDP, while the share of subsidies for fertilizer, electricity and for price support of cereals and water has steadily risen at the expense of investments in public goods, such as research and development, irrigation, and rural roads (see below). Agricultural spending is about 4 times greater on subsidies than on such important public goods. In Zambia, only about 15 per cent of the 2003/2004 agricultural budget was spent on research, extension services, and rural infrastructure (World Bank, 2008: 115). Therefore, reallocating spending on private subsidies to public goods must be a central element of policy reform to encourage sustainable agricultural production. In addition to removing ‘perverse’ incentives, governments may also consider fiscal or market-based measures (e.g. GHG emission trading systems) to internalize GHG costs (for more information in this regard, see Kasterine and Vanzetti, 2010: 91–93). Second, assuring stability in land management and tenure systems is a very important policy issue. As the UN Special Rapporteur on the Right to Food put it “in a number of countries, the Green Revolution was effectively a substitute for agrarian reform: instead of encouraging increases in food production by redistributing land to the rural poor, it did so by technology” (De Schutter, 2009). In particular, small farmers need stable tenure systems to invest in soil fertility and production methods for regenerative agriculture.63 Agrarian reform should therefore continue to take centre stage on the political agenda of governments.64 This should include issues such as recognizing customary tenure, make lesser (oral) forms of evidence on land rights admissible, strengthen women’s land rights,65 allocate more land to smallholders with secured tenure, and establish decentralized land institutions (for more information, see World Bank, 2008: 139ff). Third, the share and effectiveness of public expenditures for agricultural development must be significantly increased. Public agricultural spending has been particularly lacklustre in agriculture-dominated developing countries (see table 2).66 Policymakers need to target investments carefully, putting resources into areas that have a large impact on improving physical and R&D infrastructure, linkages between farmers, and greater investment into extension education and services.67 While national-level investment in improving the transport and storage systems remains important, particular emphasis should be placed on developing locally shared infrastructure and improving value-added activities of farmers, to name but some key issues. Savings from the removal of perverse incentives can significantly reduce additional resource requirements in this regard. There could also be incentives in the form of (time-limited) land tax exemptions or lower cost credit to stimulate private investment. Such approaches are administratively simpler than subsidies and may not run afoul of WTO rules (Herren et al., 2011). According to the President of the International Fund for Agricultural Development (IFAD), “global food security can only be achieved through significant new investment in smallholder agriculture” (cited in Mactaggart, 2010b). Furthermore, governments need to pay special attention to strengthening the agricultural innovation and extension system for ecological farming methods 68, with particular emphasis on providing innovative, locally adapted and locally sourced solutions for smallholders.69 Paving the way for mainstreaming a mosaic of sustainable agricultural production methods requires integrative learning, in which farmers and researchers in agro-ecological sciences work together to determine how to best integrate traditional practices and new agro-ecological scientific discoveries. For this to take place, new channels and platforms for information exchange and skills’ transfer need to be developed (Herren et al., 2011). Enhanced regional and international South-South co-operation could play a useful role in strengthening agricultural R&D and extension capacity. The establishment of more regional centres of excellence, regional public research institutions and closer collaboration among existing research centres would be valuable steps in this direction (UNCTAD, 2010b).70 While public investment in agricultural research and development tripled in China and India in the 1980s and 1990s, it increased by barely a fifth in sub-Saharan Africa (declining in about half of these countries) (Pardey et al., 2006). With the exception of Brazil, India, West Asia and developed countries, the share of public R&D spending in agricultural GDP stagnated or even declined (see table 3).71 Fourth, agricultural policy is generally implemented by up to a dozen of governmental institutions. Achieving policy coherence and effective coordination of their activities are important for the paradigm shift towards regenerative agriculture as outlined above. Furthermore, coordination between environmental, natural resource, energy and agricultural policies is needed to maintain a consistent set of incentives for adoption of sustainable management systems and to facilitate cross-sectoral interactions, which are often involved in carbon crediting from agriculture. According to Stolze (2010), the creation of Support Platforms, which bring together potential public and private partners, supported by relevant experts, to jointly assess and further develop the priority activities identified may be worth considering. Fifth, regulations in the financial sector that facilitate the flow of funds for mitigation benefits to local communities are also important and have been a barrier to paying farmers for environmental benefits. Financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders’ ability to compete. Financial constraints originate from the lack of asset ownership to serve as collateral and the reticence to put assets at risk as collateral when they are vital to livelihoods. The demise of special credit lines to agriculture through public programmes or state banks has left huge gaps in financial services, still largely unfilled despite numerous institutional innovations (World Bank, 2008: 13). Therefore, special credit facilities (including micro-credit), community-oriented financial services, and the effective functioning of rural development banks are important in this regard. Another mechanism for facilitating access to financing for sustainable agricultural development is the broadening of payments for environmental services.72 Watershed and forest protection, for instance, create environmental services (clean drinking water, stable water flows to irrigation systems, carbon sequestration, and protection of biodiversity) for which providers should be compensated through payments from beneficiaries of these services. Interest in the widespread use of payments for environmental services has been growing, particularly in Latin America. In Nicaragua, for example, payments induced a reduction in the area of degraded pasture and annual crops by more than 50 per cent in favour of silvo-pastoralism, half of it by poor farmers (World Bank, 2008: 16). Sixth, small-scale farmers, their networks and sustainable production methods must again become an explicit component of national development strategies and an important target for development assistance (for more information, see Cook, 2009). Seventh, strengthening the performance of producer organizations and empowering the capacity of local communities should also figure prominently on the agenda of governments. Collective action by producer organizations is important for building research and skill capacity, reducing transaction costs, increasing market power, and strengthening representation in national and international policy forums. For smallholders, producer organizations are essential to achieve competitiveness (World Bank, 2008: 14). Strengthening the capacity of local communities in their stewardship of biodiversity, conservation of rangelands and fragile agro-ecological zones must be recognized as an essential strategy. Therefore, a policy framework around the stewardship of biodiversity at all levels needs to be created. Local communities can also play a very pro-active role in facilitating exchange of local knowledge, its blending with modern scientific tools and related dissemination through farmer-field schools, participatory plant breeding and community seed banks. Local communities can also be instrumental in promoting the de-centralized use of bio- and other renewable energy sources.73 Finally, agricultural mitigation and adaptation actions should be high priority candidates for being integrated into Sustainable Development Policy and Measures (SD-PAM), Nationally Appropriate Mitigation Actions (NAMAS), and National Adaptation Programmes of Action (NAPAs). According to Stolze (2010), priority should be given to adaptation measures that bring about mitigation consistent with sustainable development objectives. The integration of agricultural mitigation programmes into agricultural development strategies will need to be part of the overall effort to improve the sector’s performance and the livelihoods of small farmers (FAO, 2009a).74 The role of agriculture has to be closely interlinked with overall national development strategies (or plans) to bring about the structural transformation required for effective climate-change adaptation and mitigation.

## Framework

Ideas (summary)

Speaking from nowhere + mills evidence as ethical framing

EPISTEMIC standpoint – we are debating about what societies we are not part of should do…

Knowledge production/speaking has a specific motivation – implication???

Links/applications

-contracts

-Kantianism/ripstein

-there was a card somewhere about turning the human from an agent to a self-interested economic actor… find it!

-Util big impacts

-Development

-Anthro

Political independence as a right. Pogge cards?

Marxism

### Socio-historical Context Key

#### Social and historical context

Mingers 2000 [(Prof J Mingers, Warwick Business School, Warwvick University) The Contribution of Critical Realism as an Underpinning Philosophy for OR/MS and Systems, The Journal of the Operational Research Society, Vol. 51, No. 11 (Nov., 2000), pp.]

Bhaskar's 12 (p 23) starting point is to argue, specifically against empiricism and positivism, that scientific reality is not just constant conjunctions of observable events but about objects, entities and structures that exist (even though perhaps unobservable) and generate the events the we observe. The form of the argument is a transcendental (this follows a broadly Kantian interpretation of 'transcen- dental') one, that is it begins with some accepted happening or occurrence and asks what must the world be like for this to occur. In this case, what is accepted by both empiricism and many forms of idealism is that we do have perceptual experience of the world, and that science is carried out through experimental activity in which scientists bring about particular outcomes. The argument is that neither empiri- cism nor idealism can successfully explain these occur- rences and that they necessitate some form of realist ontology. With regard to perception, we can note that as human beings we have to learn (as babies) to perceive things and events; that our perceptions can change (eg visual illusions); and that scientists, for example, have to be trained to make observations correctly. These all imply that [since] there must be a domain of events that are independent of our perceptions of them (what Bhaskar calls an intransitive domain). And, indeed, that these events would exist whether or not they were observed or there even were observers. There is thus a domain of actual events, only a (small) subset of which are perceived and become empirical experi- ences. That which is not experienced is not known but that does not mean to say that it does not exist. Moving on to experimental activity, we can note: that the experimenter causes (ie brings about) the experimental conditions but does not cause the results, these depend upon the causal laws that are operative; that the regularities that are expected may or may not occur depending on how well the experiment is carried out rather than on whether the presumed laws are or are not working; that in fact the occurrence of empirical regularities (ie constant conjunc- tions) in general is fairly rare that is why the experiment is necessary to try to bring them about, but that, despite this, results do in fact hold outside the experiment. The implications of this are that causal laws must be different from and independent of the patterns of events they generate, and that the experimenter aims to produce a constant conjunction of events by closing what would otherwise be an open system. Thus the intelligibility and success of experimental activity demonstrates the existence of an intransitive domain of casual laws separate from the events they generate, and the corrigibility of perception demonstrates the separation of events from particular experi- ences of them. The empiricist identification of causal laws with empirical regularities thus involves a double reduction -that of laws to events and events to experiences. The argument can be expressed in terms of the mistake that both empiricism and strong forms of idealism or conventionalism make-that is, the epistemic fallacy. The essential mistake is in reducing the ontological domain of existence to the epistemological domain of knowledge-statements about being are translated into ones about our (human) knowledge or experience of being. For the empiricist, that which cannot be experienced cannot be. For the conventionalist, limitations of our knowl- edge of being are taken to be limitations on being itself. In contrast, the realist asserts the primacy of ontology-the world would exist whether or not humans did. The argument so far establishes that given the existence of science there must be an intransitive world of events and causal laws, but what exactly are causal laws? Or, rather, what is it that causes or generates events given both the regularities that can be established in experiments, and the common absence of regularity outside? Equally, how can we assure ourselves that event regularities are based on necessary connections rather than simply coincidence? The answer is that there must be enduring [social] entities, physical (eg atoms or organisms), social (eg the market or the family) or conceptual 28 (eg categories or ideas), observable or not, that have powers or tendencies to act in particular ways. The continual operation and interaction of these entities generates (ie causes), but is independent of, the flux of events. Entities may have powers without exercising them at a particular time (it may need an experiment to trigger them), and powers may be exercised but not become manifest in events because of the countervailing operation of some other generative mechanism. The heart of this argument is that of a causal criterion for existence rather than a perceptual one. In other words, for an empiricist only that which can be perceived can exist, whereas for a realist having a causal effect on the world implies existence, regardless of perceptability. At this stage we should perhaps consider the strength of Bhaskar's argument. In essence, it is that for the practice of science to be intelligible there must be an intransitive domain of objects generating events. Could we not equally argue that for the practice of religion to be intelligible there must be a God? Clearly this argument does not hold what does is that the existence of religion implies a belief in God. What makes science different is the success of its results -the knowledge gained through experiments can be used outside the experimental setting and has had enormous effects. Science is certainly a causally effective generative mechanism. Even so, I would not want to maintain that the transcendental argument ultimately proves the truth of CR. As Bhaskar accepts, 'transcendental realism is fallible, as corrigible as the ouitcome of any other piece of hutman argument I.. .regard it as merely 'thie best account (at present) available"2 (p 170). Critical realism and natural science For Bhaskar, reality is both intransitive (existing indepen- dently of humans) and stratified"2 (p 41). The first form of stratification is between structures and mechanisms, the events that they generate, and the subset of events that are actually experienced. These are known as the domains of the real, the actual, and the empirical. The real contains mechanisms, events, and experiences, ie the whole of reality; the actual consists of events that do (or do not) occur and includes the empirical, those events that are observed or experienced. These distinctions arise from the transcendental arguments above-namely that we should not reduce all events to only those that are observed, and we should not reduce enduring causal mechanisms to events. A second form of stratification is within the realm of objects themselves' 12 (p 66) where causal powers at one level (eg chemical reactions) can be seen as generated by those of a lower level (atomic valency). One strata is emergent from another (what Bhaskar terms 'emergent powers material- ism'). The picture of the real is thus one of a complex interaction between dynamic, open, stratified systems, both material and non-material, where particular structures give rise to certain causal powers, tendencies, or ways of acting, often called by Bhaskar 'generative mechanisms'2 (p 170) (although the term 'mechanism' sounds like an object, in fact Bhaskar uses the term to refer to the powers or proper- ties of an object; for example, a plane has the generative mechanism of the power to fly). The interaction of these generative mechanisms, where one often counter- balances another, causes the presence or absence of actual events. Having established the intransitive objects of knowledge, we must recognize that the production of knowledge is very much the work of humans, and occurs in what we could call the transitive dimension4 (p 18). Acknowledging the work of sociologists, the practice of science is a social process drawing on existing theories, results, anomalies and conjec- tures (the transitive objects of knowledge) to generate improved knowledge of science's intransitive objects. This distinction allows us to admit the epistemic relativity of science, the fact that knowledge is always historically and socially located, without losing the ontological dimension. We should also note that such epistemic relativity does not imply a corresponding judgmental relativity, ie that all views are equally valid and that there are no rational grounds for choosing between them. We can now characterize the realist method of science as one of retroduction (this is the same as 'abduction' as developed by Peirce64 (p 113) in contrast to induction and deduction) where we take some unexplained phenomenon and propose hypothetical mechanisms that, if thev existed, would generate or cause that which is to be explained. So, we move from experiences in the empirical domain to possible structures in the real domain. This does not of itself prove that the mechanism exists, and we may have competing explanations, so the next step is to work towards eliminating some explanations and supporting others. Bhaskar summarizes this as: Description, Retroduc- tion, Elimination, and Identification' 14 (p 24) (DREI). He also considers a variant for applied science that may be more relevant to OR/MS (RRREI

### False Universality

#### Speaking from a “zero-point” perspective is one rooted in Western philosophies that attempt to conceal and hide ethnic, racial, gendered, and sexual epistemic locations through a universalizing knowledge that leads to domination and hierarchy

Grosfoguel 11 [(Ramon, Associate Professor Ethnic Studies Department, Chicano/Latino Studies) "Decolonizing Post-Colonial Studies and Paradigms of Political Economy: Transmodernity, Decolonial Thinking, and Global Coloniality." TRANSMODERNITY: Journal of Peripheral Cultural Production of the Luso-Hispanic World 1, no. 1, 4-6]

The first point achieving a universal consciousness, and to dismiss non-Western knowledge as particularistic and, thus, unable to achieve universality to discuss is the contribution of racial/ethnic and feminist subaltern perspectives to epistemological questions. The hegemonic Eurocentric paradigms that have informed western philosophy and sciences in the “modern/colonial capitalist/patriarchal world-system” (Grosfoguel 2005; 2006b) for the last 500 hundred years assume a universalistic, neutral, objective point of view. Chicana and black feminist scholars (Moraga and Anzaldúa 1983; Collins 1990) as well as Third World scholars inside and outside the United States (Dussel 1977) reminded us that we always speak from a particular location in the power structures. Nobody escapes the class, sexual, gender, spiritual, linguistic, geographical, and racial hierarchies of the “modern/colonial capitalist/patriarchal world-system“. As feminist scholar Donna Haraway (1988) states, our knowledges are always situated. Black feminist scholars called this perspective “afro-centric epistemology” (Collins 1990) (which is not equivalent to the afrocentrist perspective) while Latin American Philosopher of Liberation Enrique Dussel called it “geopolitics of knowledge” (Dussel 1977) and, following Fanon (1967) and Anzaldúa (1987), I will use the term “body politics of knowledge.” This is not only a question about social values in knowledge production or the fact that our knowledge is always partial. The main point here is the locus of enunciation, that is, the geo-political and body-political location of the subject that speaks. In Western philosophy and sciences the subject that speaks is always hidden, concealed, erased from the analysis. The “ego-politics of knowledge” of Western philosophy has always privilege the myth of a non-situated “Ego”. Ethnic/racial/gender/sexual epistemic location and the subject that speaks are always decoupled. By delinking ethnic/racial/gender/sexual epistemic location from the subject that speaks, Western philosophy and sciences are able to produce a myth about a Truthful universal knowledge that covers up, that is, conceals who is speaking as well as the geo-political and body-political epistemic location in the structures of colonial power/knowledge from which the subject speaks. It is important here to distinguish the “epistemic location” from the “social location.” The fact that one is socially located in the oppressed side of power relations does not automatically mean that he/she is epistemically thinking from a subaltern epistemic location. Precisely, the success of the modern/colonial worldsystem consists in making subjects that are socially located in the oppressed side of the colonial difference, to think epistemically like the ones on the dominant positions. Subaltern epistemic perspectives are knowledge coming from below that produces a critical perspective of hegemonic knowledge in the power relations involved. I am not claiming an epistemic populism where knowledge produced from below is automatically an epistemic subaltern knowledge. What I am claiming is that all knowledges are epistemically located in the dominant or the subaltern side of the power relations and that this is related to the geo- and body-politics of knowledge. The disembodied and unlocated neutrality and objectivity of the ego-politics of knowledge is a Western myth. René Descartes, the founder of Modern Western Philosophy, inaugurates a new moment in the history of Western thought. He replaces God, as the foundation of knowledge in the Theo-politics of knowledge of the European Middle Ages, with (Western) Man as the foundation of knowledge in European Modern times. All the attributes of God are now extrapolated to (Western) Man. Universal Truth beyond time and space privileges access to the laws of the Universe, and the capacity to produce scientific knowledge and theory is now placed in the mind of Western Man. The Cartesian “Cogito ergo sum” (“I think, therefore I am“) is the foundation of modern Western sciences. By producing a dualism between mind and body and between mind and nature, Descartes was able to claim non-situated, universal, Godeyed view knowledge. This is what the Colombian philosopher Santiago Castro- Gómez called the “point zero” perspective of Eurocentric philosophies (Castro-Gómez 2003). The “point zero” is the point of view that hides and conceals itself as being beyond a particular point of view, that is, the point of view that represents itself as being without a point of view. It is this “god-eye view” that always hides its local and particular perspective under an abstract universalism. Western philosophy privileges “ego politics of knowledge” over the “geopolitics of knowledge” and the “body-politics of knowledge.” Historically, this has allowed Western man (the gendered term is intentionally used here) to represent his knowledge as the only one capable of achieving a universal consciousness, and to dismiss non-Western knowledge as particularistic and, thus, unable to achieve universality. This epistemic strategy has been crucial for Western global designs. By hiding the location of the subject of enunciation, European/Euro-American colonial expansion and domination was able to construct a hierarchy of superior and inferior knowledge and, thus, of superior and inferior people around the world. We went from the sixteenth century characterization of “people without writing” to the eighteenth and nineteenth-century characterization of “people without history,” to the twentieth-century characterization of “people without development” and more recently, to the early twenty-first-century of “people without democracy”. We went from the sixteenth-century “rights of people” (Sepúlveda versus de las Casas debate in the University of Salamanca in the mid-sixteenth century), to the eighteenth-century “rights of man” (Enlightenment philosophers), and to the late twentieth-century “human rights.” All of these are part of global designs articulated to the simultaneous production and reproduction of an international division of labor of core/periphery that overlaps with the global racial/ethnic hierarchy of Europeans/non-Europeans. However, as Enrique Dussel (1994) has reminded us, the Cartesian “Cogito ergo sum” was preceded by 150 years (since the beginnings of the European colonial expansion in 1492) of the European “ego conquistus” (“I conquer, therefore I am”). The social, economic, political and historical conditions of possibility for a subject to assume the arrogance of becoming God-like and put himself as the foundation of all Truthful knowledge was the Imperial Being, that is, the subjectivity of those who are at the center of the world because they have already conquered it. What are the decolonial implications of this epistemological critique to our knowledge production and to our concept of world-system?

#### Only the pluraversality of decolonial thought challenges the privilege of Western thought

Mignolo 12 [(Walter, Professor of Literature in Duke University, Joint Appointments in Cultural Anthropology and Romance Studies) “Epistemic Disobedience and the Decolonial Option: A Manifesto,” Transmodernity: Journal of Peripheral Cultural Production of the Luso-Hispanic World, 48-50]

Decolonial thinking has as its reason of being and its objective the decoloniality of power (that is to say, of the matrix of colonial power). As noted in the previously cited article, Quijano also designed this program: First of all, epistemological decolonization is needed to clear the way for new intercultural communication, for an interchange of experiences and meanings, as the basis of another rationality which may legitimately pretend to some universality. Nothing is less rational, finally, than the pretension that the specific cosmic vision of a particular ethnie should be taken as universal rationality, even if such an ethnie is called Western Europe because this is actually to impose universalism on provincialism.12 Where, in the daily life of civil/political society, of the state and the market, do the signs of the rhetoric of modernity appear, hiding the logic of coloniality in the totalizing bubble of imperial modernity (or the universalizing cosmovision of a particular ethnic group)? These three spheres (civil/political society, state, market, or if it is preferred, daily life, government regulations, and production, distribution, and consumption of goods) are certainly not autonomous. The state and the market depend on the citizens and the consumers, which form civil and political society. The state and the market also need a segment of non-citizens (“illegal” immigrants and other forms of illegality) and of non-consumers (the growing segment of poverty all over the globe and in each country, particularly those of the ex-Third World and the ex-colonies of the ex-Second World). The citizens need the state and the market needs the consumers. But this is not all, since the state, citizens, consumers, and markets are all related via the national configuration of the state on one level, and they also interact with the market in a conflictive way. And it is here that the limits of the nation-state are opened onto the transnational level. On the level of civil society, the opening to the transnational today is manifested in migrations. Migrations generate a double effect: in the country of departure, and in the country of arrival. The events in France in November of 2005 are a paradigmatic case in the transnational sphere of economic and state consequences in the sphere of civil/political society in industrialized countries (particularly in the G7 in which the economic power is concentrated). At the level of the market (and with that I refer to economic control of urban and rural land; to the exploitation of labor and to production and consumption), the massive burning of automobiles in France reveals a place where the garden of civil society within the bubble of modernity meets with the invisible consequences of coloniality. Where, then, do the symptoms of the unresolved tension between the rhetoric of modernity and the logic of coloniality, constitutive of two heads from the same body, emerge in daily life? Where does decolonial energy emerge and how is it manifested? These uprisings in France reveal a point of articulation between the sphere and the illusion of a world that is similarly thought of and constructed as THE world (rhetoric of modernity) and the consequences underlying this rhetoric (logic of coloniality). Within and from this world, what is apparent is the cruelty, irrationality, youth, and immigration that must be controlled by police and military power, imprisoning and using cases such as these in order to sustain the rhetoric of modernity. The liberal tendency will propose education, the conservative tendency expulsion, and the leftist tendency inclusion. All of these solutions leave intact the logic of coloniality: in the industrialized countries, developing countries, the ex-First World, the G-7—in the long run, the logic of coloniality returns like a boomerang, in a movement that began in the sixteenth century. In developing countries, the ex-Third World, the logic of coloniality continues its climbing march (today, literally, in the zone of the Amazon and in the West of Colombia, where the presence of yellow bulldozers are set up together with the The boomerang returned from the outside the borders of the G7: the boomerang returned within (the Twin towers in New York, the train in Madrid, the bus and subway in London), but it also returned outside (Moscow, Nalchik, Indonesia, Lebanon). The fact that we condemn the violence of these acts—in which one never knows where the limits are between the agents of civil and political society, the states and the market—does not mean that we should close our eyes and keep on understanding these acts as they are presented to us by the rhetoric of modernity, in the mass media and in the official discourses of the state! In general, the media hides under a pretense of information. In particular, there are corners of the media where the dissenting analyses fight to make themselves heard. But these analyses disagree on the content but not the terms of the conversation. Decolonial thinking does not appear yet, not even in the most extreme leftist publications. And the reason is that decolonial thinking is not leftist, but rather another thing entirely: it is a de-linking from the modern, political episteme articulated as right, center, and left; it is an opening towards another thing, on the march, searching for itself in the difference. To condemn terrorist violence does not mean that we yield to that thinking. That luxury can be given to persons with particular interests (and in certain cases, with limitations in their understanding of the global situation), such as former President George W. Bush and former Prime Minister Tony Blair. On the other hand, to understand this violence within the interpretive frame common to that of the Cold War (that is, an Occidental liberal, capitalist, and Protestant Christian against an Occidental-Oriental (i.e., Eurasian) Socialist in politics, Communist in economics and Orthodox Christian in religion, makes invisible again the opening towards a freedom that exists elsewhere and not in the confrontation between opposites in the same ideological system: liberalism vs. socialism. Where? For example, in the political decolonization movements that existed approximately between 1947 and 1970. Without a doubt, these movements failed; in a manner similar to the failure of socialism/communism in Russia. But both left footprints. I must mention two exceptions before going forward in order to, in reality, go towards the past.

#### Epistemology must be the focus of debate – zero point is false

Mignolo 9 [(Walter, Professor of Literature in Duke University, Joint Appointments in Cultural Anthropology and Romance Studies) “Epistemic Disobedience, Independent Thought and Decolonial Freedom,” Theory, Culture, & Society, 161-163]

ONCE UPON a time scholars assumed that the knowing subject in the disciplines is transparent, disincorporated from the known and untouched by the geo-political configuration of the world in which people are racially ranked and regions are racially configured. From a detached and neutral point of observation (that Colombian philosopher Santiago Castro-Gómez (2007) describes as the hubris of the zero point), the knowing subject maps the world and its problems, classifies people and projects into what is good for them. Today that assumption is no longer tenable, although there are still many believers. At stake is indeed the question of racism and epistemology (Chukwudi Eze, 1997; Mignolo, forthcoming). And once upon a time scholars assumed that if you ‘come’ from Latin America you have to ‘talk about’ Latin America; that in such a case you have to be a token of your culture. Such expectation will not arise if the author ‘comes’ from Germany, France, England or the US. In such cases it is not assumed that you have to be talking about your culture but can function as a theoretically minded person. As we know: the first world has knowledge, the third world has culture; Native Americans have wisdom, Anglo Americans have science. The need for political and epistemic delinking here comes to the fore, as well as decolonializing and decolonial knowledges, necessary steps for imagining and building democratic, just, and non-imperial/colonial societies. Geo-politics of knowledge goes hand in hand with geo-politics of knowing. Who and when, why and where is knowledge generated (rather than produced, like cars or cell phones)? Asking these questions means to shift the attention from the enunciated to the enunciation. And by so doing, turning Descartes’s dictum inside out: rather than assuming that thinking comes before being, one assumes instead that it is a racially marked body in a geo-historical marked space that feels the urge or get the call to speak, to articulate, in whatever semiotic system, the urge that makes of living organisms ‘human’ beings. By setting the scenario in terms of geo- and body-politics I am starting and departing from already familiar notions of ‘situated knowledges’. Sure, all knowledges are situated and every knowledge is constructed. But that is just the beginning. The question is: who, when, why is constructing knowledges (Mignolo, 1999, 2005 [1995])? Why did eurocentered epistemology conceal its own geo-historical and bio-graphical locations and succeed in creating the idea of universal knowledge as if the knowing subjects were also universal? This illusion is pervasive today in the social sciences, the humanities, the natural sciences and the professional schools. Epistemic disobedience means to delink from the illusion of the zero point epistemology. The shift I am indicating is the anchor (constructed of course, located of course, not just anchored by nature or by God) of the argument that follows. It is the beginning of any epistemic decolonial de-linking with all its historical, political and ethical consequences. Why? Because geo-historical and bio-graphic loci of enunciation have been located by and through the making and transformation of the colonial matrix of power: a racial system of social classification that invented Occidentalism (e.g. Indias Occidentales), that created the conditions for Orientalism; distinguished the South of Europe from its center (Hegel) and, on that long history, remapped the world as first, second and third during the Cold War. Places of nonthought (of myth, non-western religions, folklore, underdevelopment involving regions and people) today have been waking up from the long process of westernization. The anthropos inhabiting non-European places discovered that s/he had been invented, as anthropos, by a locus of enunciations self-defined as humanitas. Now, there are currently two kinds or directions advanced by the former anthropos who are no longer claiming recognition by or inclusion in the humanitas, but engaging in epistemic disobedience and de-linking from the magic of the Western idea of modernity, ideals of humanity and promises of economic growth and financial prosperity (Wall Street dixit). One direction unfolds within the globalization of a type of economy that in both liberal and Marxist vocabulary is defined as ‘capitalism’. One of the strongest advocates of this is the Singaporean scholar, intellectual and politician Kishore Mahbubani, to which I will return later. One of his earlier book titles carries the unmistakable and irreverent message: Can Asians Think?: Understanding the Divide between East and West (2001). Following Mahbubani’s own terminology, this direction could be identified as de-westernization. Dewesternization means, within a capitalist economy, that the rules of the game and the shots are no longer called by Western players and institutions. The seventh Doha round is a signal example of de-westernizing options. The second direction is being advanced by what I describe as the decolonial option. The decolonial option is the singular connector of a diversity of decolonials. The decolonial paths have one thing in common: the colonial wound, the fact that regions and people around the world have been classified as underdeveloped economically and mentally. Racism not only affects people but also regions or, better yet, the conjunction of natural resources needed by humanitas in places inhabited by anthropos. De-colonial options have one aspect in common with de-westernizing arguments: the definitive rejection of ‘being told’ from the epistemic privileges of the zero point what ‘we’ are, what our ranking is in relation to the ideal of humanitas and what we have to do to be recognized as such. However, decolonial and de-westernizing options diverge in one crucial and in - disputable point: while the latter do not question the ‘civilization of death’ hidden under the rhetoric of modernization and prosperity, of the improvement of modern institutions (e.g. liberal democracy and an economy propelled by the principle of growth and prosperity), decolonial options start from the principle that the regeneration of life shall prevail over primacy of the production and reproduction of goods at the cost of life (life in general and of humanitas and anthropos alike!). I illustrate this direction, below, commenting on Partha Chatterjee’s re-orienting ‘eurocentered modernity’ toward the future in which ‘our modernity’ (in India, in Central Asia and the Caucasus, in South America, briefly, in all regions of the world upon which eurocentered modernity was either imposed or ‘adopted’ by local actors assimilating to local histories inventing and enacting global designs) becomes the statement of interconnected dispersal in which decolonial futures are being played out. Last but not least, my argument doesn’t claim originality (‘originality’ is one of the basic expectations of modern control of subjectivity) but aims to make a contribution to growing processes of decoloniality around the world. My humble claim is that geo- and body-politics of knowledge has been hidden from the self-serving interests of Western epistemology and that a task of decolonial thinking is the unveiling of epistemic silences of Western epistemology and affirming the epistemic rights of the racially devalued, and decolonial options to allow the silences to build arguments to confront those who take ‘originality’ as the ultimate criterion for the final judgment.

### Misc

#### Decolonial projects must exist separate from discussions rooted in the genealogy of the North and West – a combination reinscribes projects in a European model and crushes the alt

Mignolo 12 [(Walter, Professor of Literature in Duke University, Joint Appointments in Cultural Anthropology and Romance Studies) “Epistemic Disobedience and the Decolonial Option: A Manifesto,” Transmodernity: Journal of Peripheral Cultural Production of the Luso-Hispanic World, 47-49]

The de-colonial epistemic shift is a consequence of the formation and founding of the colonial matrix of power, a point that Aníbal Quijano pioneered in an article in which he summarizes the platform of the modernity/coloniality project: The critique of the European paradigm of rationality/modernity is indispensable even more, urgent. But it is doubtful if the criticism consists of a simple negation of all its categories; of the dissolution of reality in discourse; of the pure negation of the idea and the perspective of totality in cognition. It is necessary to extricate oneself from all the linkages between rationality/modernity and coloniality, first of all, and definitely from all power which is not constituted by free decisions made by free people. It is the instrumentalisation of the reasons for power, of colonial power in the first place, which produced distorted paradigms of knowledge and spoiled the liberating promises of modernity. The alternative, then, is clear: the destruction of the coloniality of world power.6 Even though the meta-reflection about the decolonial epistemic shift is a recent development, epistemic decolonial practice arose “naturally” as a consequence of the formation and implementation of structures of domination—the colonial matrix of power or the coloniality of power—which Aníbal Quijano revealed towards the end of the 80s and continues to work on. Therefore, it is not surprising that the genealogy of decolonial thinking (that is, the thinking that arose from the decolonial turn) is found in the “colony” or in the “colonial period,” in the canonical jargon of the historiography of the Americas. That period of formation in the sixteenth century still does not include the English colonies in either the North or in the Caribbean; nor does it include those of the French. However, the decolonial turn re-appears in Asia and Africa as a consequence of the changes, adaptations, and new modalities of modernity/coloniality generated by the British and French imperial expansion starting from the end of the eighteenth century and continuing through to the beginning of the nineteenth century. As a result, we find the first manifestations of the decolonial turn in the Hispanic viceroyalties, those of Anáhuac and Tawantinsuyu, in the sixteenth and the beginning of the seventeenth century. We also find it in the English colonies and metropolis in the eighteenth century. Waman Puma de Ayala is the first case of the decolonial turn in the viceroyalty of Peru (as seen in his work New Chronicle and Good Government, sent to Phillip III in 1616); the second case being that of Otabbah Cugoano, an emancipated slave who was able to publish his Thoughts and Sentiments on the Evil of Slavery in London in 1787 (ten years after the Independence of the United States and the publication of The Wealth of Nations by Adam Smith). Both works are decolonial political treatises that, thanks to the coloniality of knowledge, were not able to share the table of discussion with the likes of Machiavelli, Hobbes, and Locke. To reinscribe them today in the genealogy of decolonial thinking is an urgent project. Without this genealogy, decolonial thinking would be nothing more than a gesture whose logic would depend on some of the various genealogies founded by Greece and Rome, and be re-inscribed in the European imperial modernity after the Renaissance, in some of the six imperial languages already mentioned: Italian, Castilian, and Portuguese during the Renaissance; French, English, German during the Enlightenment. Waman Puma and Cugoano thought and opened a space for the unthinkable in the imperial genealogy of modernity, as much in their rightist aspects as in their leftist aspects. That is to say, the imperial genealogy of the Christian, Liberal, and Socialist/Marxist modernity. Waman Puma and Cugoano opened the doors to an other thinking, to a border thinking, by way of the experience and memory of Tawantinsuyu in the former; and of the experience and memory of the brutal African slavery of the Atlantic in the latter. None of those who defended the indigenous peoples in the sixteenth century, nor those who protested against slavery in the eighteenth century initiated a mode of thinking from the space and the experiences of the colonial wound infringed upon the Indians and the Blacks, such as the imperial epistemology that classified the diversity of the New World (see Quijano in this same issue).7 European political theory (from Niccolò Machiavelli to Carl Schmitt, continuing with Thomas Hobbes and John Locke) was constructed on the basis of the experiences and the memory of kingdoms and principalities (Machiavelli), the formation of free states (Hobbes, Locke), and the crisis of the liberal state (Schmitt). How does one interpret the metaphor of the previous paragraph, “opened the doors to an other thinking?” As de-linking and opening.8 Perhaps with another metaphor that cooperates with the intelligibility of the type of doors which I speak of in this case. It does not deal with the doors that lead towards the truth (aletheia), but rather to other places; to the places of colonial memory; to the footprints of the colonial wound from where decolonial thinking is weaved.9 Doors that lead to other types of truths whose basis is not being but the coloniality of being, the colonial wound. Decolonial thinking presupposes, always, the colonial difference (and in certain cases that I am not going to analyze here, the imperial difference). That is, exteriority in the precise sense of the outside (barbaric, colonial) that is constructed by the inside (civilized, imperial); an inside founded upon what Castro-Gómez revealed as the hubris of the starting point, 10 the presumed totality (totalization) of the gnosis of the Occident, we remember once again, in Greek and Latin and the six modern languages of imperial Europe. The decolonial turn is the opening and the freedom from the thinking and the forms of living (economies-other, political theories-other), the cleansing of the coloniality of being and of knowledge; the de-linking from the spell of the rhetoric of modernity, from its imperial imaginary articulated in the rhetoric of democracy. In dialogue with imperial critical reason, I would state the following: Martin Heidegger translated aletheia (truth) as “The open and free space of the clearing of being.”11 Given that empowerment is the horizon of decolonial thinking (and not the “truth”), “it is the open and free in the decoloniality of being.” It does not matter how many critiques we make of imperialism or of empire. These are all shifts that go right around in a circle, biting us in the tail. Critics of the language of empire continue hiding the door, the opening and the freedom that point towards decolonial thinking. Metaphors such as “a world in which many worlds fit” and “another world is possible” are metaphors that reveal where this door is.

## Neolib Frontlines

### Corporate Control Bad

#### Corporations are controlling stuff, poverty

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

4. From food first to trade first: How corporations are taking over Indian agriculture through trade Trade liberalisation and globalisation of agriculture is robbing the peasants and landless workers of already low incomes and livelihood security. There are three mechanisms by which the rural producers are either being super-exploited or they are being rendered dispensable. 1. Destruction of the market support at domestic level both in terms of procure- ment and in terms of guarantee of Minimum Support Price (MSP). The MSP is to agriculture what minimum wages are in the individual and service sectors, the minimum prices a farmer should receive to cover costs of pro- duction and her/his labour. However, as a result of globalisation, the government has started to withdraw from its role in procurement and price regulation. Riots have occurred in different parts of the country with farmers protesting against lack of markets and fall in prices of agricultural commodities. The case of cotton, for instance, has been discussed above. 2. Diversion from food crops to perishable cash crops and promotion of monocultures thus creating market dependency on corporate monopolies. Globalisation policies have promoted the idea that farmers should shift from food grains and stapes to vegetables and fruits. Export promotion zones for fruits and vegetables are a major thrust area in the new agriculture policy. On the one hand this erodes food security for households and the nation. On the other hand it pushes farmers into distress sales, since fruits and vegetables cannot be consumed or stored at the household level. 3. Removal of Quantitative Restrictions (QRs) on imports and dumping of sub- sidised, artificially cheap imports. A dispute initiated by the U.S. against India in the WTO forced the removal of QRs. This has translated into destruction of domestic markets and prices in India being perturbed by the artificially low international prices of commodities. While forcing India to remove import restrictions and reduce domestic support to farmers and the poor, the US has further increased its farm subsidies to USD 180 billion over the next six years amounting to USD 20 billion annually. Most of these subsidies go to agribusiness and to capture export markets. In addition, $10 million funding was made available for export promotions by 65 U.S. trade organi- zations under the 2002 Market Access Program (MAP) and another $90 million for Market Access under the fiscal year 2002. The Farm Bill 2002 also provides that MAP funding be increased to $200 million by 2006 [17]. Transnational agribusiness giants like Cargill, ADM and Conagra are, in fact, the only beneficiaries from the liberalization of imports and removal of import restrictions. They benefit both from using their immense financial clout to depress world prices during pro- curement and hike it during sales, as well as from the various subsidies that are given to them for both exporting as well as importing, from both exporting and importing countries. A recently released report from the International Agriculture and Trade Policy Institute has shown that in four major U.S. commodities, the level of dumping has increased since 1995 when the W.T.O. came into force, even though the proclaimed aim of W.T.O. is to ‘‘reduce distortions in trade’’. From 1995–2001 dumping jumped from 23–44% in the case of wheat, 9–29% in the case of soya beans, 11–33% in the case of maize, from 17–57% in the case of cotton [6]. According to the World Bank, low cotton prices in U.S. resulting from high subsidies are costing African countries $250 million each year [6]. 4.1. The case of edible oils From 70s to the late 80s, India was a heavy importer of edible oils. In 1986– 1987, India produced 3.9 MT of edible oils, and imported 1.5 MT (28% depen- dency). However, thanks to the Technology Mission on Oilseeds, the total oilseed production soared from 11.3 MT in 1986–1987 to 21.5 MT in 1993 (10.5% average annual growth). Imports fell to a negligible 0.35 million tonnes. In 1998, as a tem- porary shortage of edible oils, combined with unchecked hoarding drove up prices, the government liberalised imports. At the same time the US flooded the world market with soyabean and soya oil, further driving down international prices of soyameal and all edible oils. As a result India has become the largest edible oil importer in the world. 43% of the total edible oil available in the country is impor- ted [17]. As the acreage under oilseeds decreases, with farmers reeling under the price collapse, further imports are envisaged. Thus, while removing of subsidies and creation of a ‘‘level playing field’’ was the most important argument used by the government for joining WTO in 1974, north- ern subsidies have actually increased and the playing field has become more uneven. The removal of QRs when combined with dumping becomes a genocidal trade system in which small peasants are wiped out to create global corporate monopolies over food, resulting in the dismantling of the domestic food pro- duction system. In the face of rising subsidies and increasing dumping, import restrictions and countervailing duties are a right, a survival necessity, as countries like India, Argentina, Philippines have proposed. WTO has robbed countries of this right through Art. 4. India and other developing countries should focus on stopping dumping by eliminating Art 4 of Agreement of Agriculture (AoA) which is the basis of the destruction of food security and rural livelihoods in the Third World. Once this crippling clause is removed, countries can start building a global system on citizens initiatives and national priorities that ensures sustainability, supports small farmers, ensures just prices, prevents dumping, protects the countryside and the environment and ensures good, safe, adequate food for all.

### Timms XT---A2 Econ

#### Development theory is a manifestation of colonialism – reject it

Timms 8 [(Benjamin F. Timms, Social Sciences Department, California Polytechnic State University) “Development theory and domestic agriculture in the Caribbean: recurring crises and missed opportunities” Caribbean Geography 2008 15(2)] AT

The application of development theory in the Caribbean has legitimised industrialisation and export agriculture at the expense of agricultural production for the domestic market, maintaining the colonial legacy of a plantation economy. The customary explanation assumes that development theory deems domestic agriculture as unviable while emphasising the comparative advantage of tropical crops for export (Figueroa, 1996). However, in retrospect, it appears that the theorists are not solely to blame. The particular applications of many development strategies have failed to take account of the role of agricultural production for domestic consumption elaborated in the theories. Itis the pur­ pose ofthis paper to seek out the misplaced theory regarding the role ofdomestic agricul­ ture in the development process and make a case for the return to a more balanced interpretation oftheory that guides action. The neglect of domestic agriculture has resulted in the Caribbean becoming a net food importer with a growing food import bill and increased food insecurity. The revitalisation of domestic agriculture can help address these problems and contribute to diversification of Caribbean economies (Deep Ford & Rawlins, 2007; McIntosh & Manchew, 1985). With 26 percent of the Caribbean labour force engaged in agriculture the contributions domestic agriculture can have for rural livelihoods are significant (FAG,2008). However, the promotion of domestic agriculture requires challenging the legacies of resilient plantation economies in the Caribbean. Throughout history, economic crises have provided windows of opportunity for contestation of the plantation legacy and several development theories have made the attempt to do so (Lewis, 1955; Beckford, 1972). Advocating agricultural production for the domestic market as part ofthe devel­ opment process, these efforts have repeatedly been thwarted by both internal and external forces. Yet today the global food crisis has provided another opportunity for the nations of the Caribbean to implement long-lasting change in the agricultural sector. Will the lessons beheeded orwill historymerely repeat itselfasthe plantation economy is perpet­ uated? Here the histoiical role ofdomestic agriculture in the development process will be explained from the colonial past through the present, focusing on recurring crisis and resultant opportunities, and concluding with a call for action. In the context ofthe current global food crisis, the timeliness of such an endeavour has indeed become urgent.

## Enviro/Culture Frontlines

### Gonzalez Cards

#### Current industrial agriculture models result in destruction of biodiversity – this results in widespread harm

Gonzalez 7 [(Carmen, Fulbright Scholar in Argentina, a Visiting Fellow at Cambridge University in the United Kingdom, a Visiting Professor at the Hopkins-Nanjing Center in Nanjing, China, Chair of the Environmental Law Section of the Association of American Law Schools) “Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens” A Center for Progressive ReformWhite Paper April 2007] AT

The patterns of trade and production that produce undernourishment and environmental degradation in the developing world have their origins in colonialism.64 Colonialism relegated the colonized “periphery” to production of raw materials for the benefit of the colonizing “core.”65 By the late 19th century, places as diverse as India (cotton producer), Cuba (sugar producer), Egypt (cotton producer), Argentina (beef and wheat producer), and Ghana (cocoa producer) had come to specialize in the production of primary agricultural commodities for export.66 After political independence, many developing countries continued to specialize in agro-export production and to import manufactured goods.67 This economic specialization diverted prime crop land in developing countries from food production to cash crop production and encouraged reliance on food imports to satisfy domestic nutritional requirements.68 Economic specialization in agro-export production also degraded the environment by replacing biodiverse agroecosystems with monocultures that required large amounts of chemical pesticides and fertilizers.69 This economic specialization deprived developing countries of the stable and steady revenue stream needed for productive investment by subjecting their export earnings to the vagaries of the weather, the fluctuations in world markets for agricultural commodities, and the declining terms of trade for agricultural commodities in relation to manufactured goods.70 Finally, in the developing countries that practiced plantation agriculture, colonialism concentrated land ownership in the hands of the rural elite (and subsequently foreign and domestic agro- export enterprises), and relegated small farmers to marginal, ecologically fragile lands.71 In the aftermath of the Second World War, the Green Revolution extended monocultural production techniques in developing countries from cash crops to food crops.72 As a consequence of the Green Revolution, the world’s food supply came to rely on an increasingly smaller number of crops and on a narrower genetic base.73 Farmers throughout the developing world abandoned traditional biodiverse cultivation techniques in favor of uniform seeds, chemical fertilizers, and synthetic pesticides manufactured by transnational corporations headquartered in the industrialized world.74 In developing countries, the environmental and food security consequences of the Green Revolution included agrochemical contamination of surface waters and groundwater, increased pesticide-related death and illness, soil degradation, loss of ecosystem biodiversity, loss of traditional food crops, and increased vulnerability of the food supply to pests and disease.75

#### Biodiversity

Gonzalez 7 [(Carmen, Fulbright Scholar in Argentina, a Visiting Fellow at Cambridge University in the United Kingdom, a Visiting Professor at the Hopkins-Nanjing Center in Nanjing, China, Chair of the Environmental Law Section of the Association of American Law Schools) “Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens” A Center for Progressive ReformWhite Paper April 2007] AT

Fourth, biological diversity is necessary for ecosystem health and for the integrity of the world’s foodsupply.61 The cultivation of uniform crop varieties (in lieu of planting diverse crops and diverse genetic strains of a particular crop) increases vulnerability to pest and disease infestation, depletes the soil of vital nutrients, promotes dependence on harmful agrochemicals, increases the risk of catastrophic crop failure in the event of a blight, and adversely affects human nutrition by reducing the variety of foods consumed.62 Thus, economic policies that directly or indirectly promote monocultural production techniques jeopardize the biological diversity necessary to protect the health and resilience of the world’s agroecosystems.63 In order to understand the relevance of these points to contemporary trade and agricultural policy, it is important to examine the historic roots of hunger and ecologically unsustainable farming practices in the developing world.

### Culture O/w

#### Prioritize the genocidal destruction of cultural heritage over maximizing production – their purely economic lens systematically excludes indigenous value systems

Pimbert 99 [(Michael, agricultural ecologist, a Visiting , Fellow at the Institute of Development Studies, Research Associate in the Sustainable Agriculture and Rural Livelihoods Programme) “Sustaining the Multiple Functions of Agricultural Biodiversity” Natural Resources Management and Environment Department] AT

Private companies, particularly transnational corporations that market agricultural inputs and process food and ﬁbres, exert a strong inﬂuence on the type of agricultural biodiversity used in production. During the 1940s and 1950s, research and development (R8-D) capabilities started to move out of public institutions into the hands of the private sector. By the late 1990's, the pace of corporate concentration in the food, agrochemicals, pharmaceuticals, seeds and animal veterinary products accelerated. In 1998, the top ten seed companies controlled approximately 32% of the US $23 billion seed trade world-wide whilst the top ten animal health ﬁrms control about 60% of the US $17 billion animal health industry. Over 85% of the US$ 31 billion agrochemical market is controlled by less than eight corporations. With the help of new biotechnologies (e.g. gene splicing, enzyme technology) traditional boundaries between pharmaceuticals, agribusiness, biotechnology, food, chemicals, cosmetics and the energy sector are becoming increasingly blurred. Biology and the use of the diversity offered by plant, animal and microbial genetic resources is the common denominator (Baumann et al, 1996; RAFI, 1999). In many countries, including in the OECD countries, the R&D budget of these corporations dwarfs that of public sector research. As a result, corporate priorities and industrial strategies are increasingly reﬂected in research, development and distribution of seeds, livestock and other technologies that directly affect agricultural biodiversity. Evidence suggests that the corporate quest for commercial proﬁts and control over production has promoted more, rather than less, genetic and ecological uniformity in agroecosystems. For example, new biotechnologies such as pesticide resistant crops and seeds engineered to terminate germination after one growing season constitute potentially serious threats for agricultural biodiversity, at different temporal and spatial scales (Ho, 1997; UNEP-CBD-SBS1"l'A, 1999). Concerns are increasingly voiced regarding the level of inﬂuence some corporations have in determining which areas of scientiﬁc knowledge are developed, and for whom. The private sector invariably privileges planning and investment directed at short-term retums rather than longer-term ones. Over time for example, a range of more reductionist scientiﬁc perspectives and techniques have been selectively favoured over whole ecosystem science approaches, basic taxonomic work, population biology, landscape ecology and understandings of human-environment interactions based on plurial and interdisciplinary perspectives. This seriously undermines the long term ability of society to design sustainable agroecosystems based on a functional agricultural biodiversity that reduces dependence on suppliers of off farm inputs. Moreover, market dominance combined with monopoly patents gives the life industry unprecedented control over the products and processes of agricultural biodiversity, the biological basis of food and livelihood security. inequitable tenure and control over resources A signiﬁcant cause of agricultural biodiversity loss is linked with the inequitable access to, and control over, land, water, trees and genetic resources. Denying rights of access and resource use to local people severely reduces their incentive to conserve resources and undermines local livelihood security. Both colonial and many national governments have a long history of denying the rights of indigenous peoples and rural communities over their ancestral lands and the resources contained therein. Denial of access, insecure tenure and rights of usufruct over the agricultural biodiversity contained in protected areas is one of the major factors undermining both conservation and development objectives (Ghimire and Pimbert, 1997). The same is true for forests, wetlands, farms, rangelands and common property lands outside of protected area networks. Recognition of anthropogenic landscapes and "wild" species moulded by human agency has important implications for ownership, and consequently rights over access and use of biological resources. However, Western concepts of private properly do not recognise the intellectual contributions and informal innovations of indigenous and rural peoples who have modiﬁed, conserved and managed so called "wild" species and landscapes (Cmcible, 1994). lnequities in access and control over genetic resources of domesticated plant and animals have also contributed to the erosion of diversity and the exploitation or displacement of local knowledge. Although most genetic resources originate from developing countries, transnational companies and northem institutions have captured a larger share of the beneﬁts from using such resources in breeding programs and new natural product development. Legal means such as industrial patents and other intellectual properly rights allow companies and northem institutions to maintain disproportionate control over the knowledge, genetic resources and beneﬁts associated with agricultural biodiversity (GRAIN, 1998,1999; Tansey, 1999). In contrast, the local communities and farmers who originally nurtured this genetic diversity have generally not been recognised nor compensated for their innovations. Market pressures and the undervaluatlon of agricultural biodiversity Even though agricultural biodiversity has many values and performs many functions, it is undervalued or even ignored in conventional economic assessments. This is partly because the multiple ecological functions of agricultural biodiversity are difﬁcult to value in economic terms. Moreover, the few economic analyses of biological diversity conducted so far have essentially focused on global values and foreign exchange elements and very little on the household use values of, for example," wild” foods and medicines (Scoones et al, 1992; IIED, 1995). Simple economic valuations based on direct use values (for consumption or sale) (see Pearce et al, 1989) have often been misleading and too reductionist to provide a sound decision making basis for policy makers and land use planners. The economic and social values of much of the biological diversity that nurtures mral people have been ignored or underperceived by outside professionals. This has biased conventional resource planning in favour of major food crops and species of commercial importance for urban centres. The expansion of global markets and recent patterns of trade liberalisation tend to have a homogenising effect on agricultural biodiversity by standardising food production and consumption. Global markets usually demand uniform foods that are increasingly processed and sold by transnational corporations, and are geared to meet the food desires of relatively wealthy, urban based consumers- both in developing and developed countries. In tum, these market pressures often force farmers world-wide to comply with those demands for uniformity. The policies for harmonisation of standards that accompany the globalisation of markets are also powerful forces undermining efforts for the sustainable use of local agricultural biodiversity and local adaptations.

#### Replace this card – destruction of culture = colonialism

Jayan Nayar, [Professor in the School of Law at the University of Warwick, 1999 “Orders of Inhumanity”, Transnational Law and Contemporary Problems, Fall, Lexis]

Despite the vision of world-order founded on a notion of a universal society of humankind aspiring toward a universal common good, (first given meaning within a conceptual political-legal framework through the birth of the so-called "Westphalian" state system), the materialities of "ordering" were of a different complexion altogether. Contrary to the disembodied rhetoric of world-order as bloodless evolution, the new images of the world and languages of "globality" did not evolve out of a sense of "hospitality" <=16> n15 to the "other," the "stranger." Rather, the history of the creation of the post-Westphalian "world" as one world, can be seen to be most intimately connected with the rise of an expansionist and colonizing world-view and practice. Voyages of "discovery" provided the necessary reconnaissance to image this "new world." Bit by bit, piece by piece, the jigsaw of the globe was completed. With the advance of the "discoverer," the "colonizer," the "invader," the "new" territories were given meaning within the hermeneutic construct that was the new "world." [\*607] The significance of this evolution of the world does not, however, lie merely in its acquiring meaning. It is not simply the "idea" of the world that was brought to prominence through acts of colonization. The construction of the "stage" of the world has also occurred, albeit amid the performance of a violent drama upon it. The idea of a single world in need of order was followed by a succession of chained and brutalized bodies of the "other." The embodied world that has been in creation from the "colonial" times to the present could not, and does not, accommodate plurality. The very idea of "one world" contains the necessary impetus for the absorption, assimilation, if not destruction, of existing worlds and the genocide of existing socialities. This violence of "ordering" within the historical epoch of colonialism is now plainly visible. Through "colonialism" was reshaped the material basis of exchange that determined human relationships. Put differently, the very idea of what is "human" was recast by the imposed value-systems of the "civilizing" process that was colonialism. To be human, to live, and to relate to others, thus, both lost and gained meaning. Lost were many pre-colonial and indigenous conceptions of human dignity, of subsistence, production, consumption, wealth and poverty. Gained was the advent of the human "self' as an objective "economic" agent and, with it, the universals of commodification as the basis for human relations. Following this transformation of the material political-economy of the colonized, or "ordered," colonialism entrenched the "state" as the symbolic "political" institution of "public" social relations. The effect of this "colonization of the mind" was that the "political-economic" form of social organization--the state--was universalized as common, if not "natural," resulting in a homogenization of "political" imagination and language. Thus, diversity was unified, while at the same time, unity was diversified. The particularities and inconveniences of human diversity--culture and tradition--were subordinated to the "civilized" discourse of secular myths (to which the "rule of law" is central), <=17> n16 while concurrently, humanity was formally segregated into artificial "states," enclosures of mythic solidarities and common destinies. This brief remembering of colonialism as an historic process, provides us with the most explicit lessons on the violence of the "ordering" of "worlds." From its history we see that an important feature of ordering prevails.The world of those who "order" is the destruction of the "worlds" of those ordered. So many ideologies of negation and (re)creation served to justify this "beginning"--terra nullius, the "savage" native, the "civilizing mission." <=18> n17 The [\*608] "world," after all, had to be created out of all this "unworldly" miasma, all for the common good of the universal society of humankind, Although historical colonialism as a formal structure of politico-legal ordering of humanity has come and gone, the violence of colonization is very much a persistent reality. A striking feature of historical world-orderings was the confidence with which the "new world" was projected upon human imagination. Colonialism was not a tentative process. The "right" of colonization, both as a right of the colonizer and as a right thing to do by the colonizer, was passionately believed and confidently asserted. Thus, for the most part, this "right" was uncontested, this confidence unchallenged. "World-order" today is similarly asserted with confidence and rectitude, Contemporary world-orderings, consistent with those of the past, are implemented using a range of civilizational legitimization. With the advent of an ideology of "humanity," a "post-colonial" concession to human dignity demanded by the previously colonized, new languages of the civilizational project had to be conceived of and projected. "Freed" from the brutalities of the order of historical colonialism, the "ordered" now are subjected to the colonizing force of the "post-colonial," and increasingly, globalization-inspired ideologies of development and security. Visible, still, is the legitimization of "order" as coercive command through the rhetoric of "order" as evolutionary structure. A. Contemporary Ideologies of Colonization The promise of "new beginnings" has been a constant feature in the rhetoric of post-colonial world-orders, for, after all, new beginnings have a certain captivating allure. "Liberation" from the old has found utterance in a myriad of slogans--independence, peace, security, nation-building, democracy, development, prosperity--made during Party Annual General Meetings, with launches of National Development Plans, or at the lavish settings of the United Nations and international Conferences. With the passing of the blemished age of colonialism, the powerful--national governments, the UN, the World Bank and IMF, and even those countries who individually and severally brutalized and pillaged the formerly "uncivilized"--are now willing, it would seem, to get into the act of creating the "new age" of welfare for all. New beginnings, and more new beginnings, the (once) new United Nations, <=19> n18 the (now dead) New International Economic [\*609] Order, the (still-born) new "sustainable development," the (old) New World-Order, each grand promise of tomorrow ushered in, tired and haggard, but accompanied with much frenzied trumpeting.

### Pesticide Dependence Impact

#### Poverty impact card + organics key

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

While costs of cultivation are higher because of costly non-renewable seeds and chemicals, the price of agricultural produce is collapsing due to removal of price and import regulation, a direct result of trade liberalisation. As production becomes more costly, and agricultural prices fall, indebtedness and 722 V. Shiva / Futures 36 (2004) 715–732 economic displacement become the fate of the peasantry, played out in its most tra- gic expression through farmers’ suicides. More than 20,000 farmers have committed suicides because of the debt trap of high cost seeds over the last few years. Farmers are spending Rs. 100,000 per acre and in a good harvest earning Rs. 10,000, a recipe for debt and suicide [11]. Peasant survival, just and remunerative prices, conservation and sustainable use of vital natural resources, including soil, water and biodiversity, healthy food pro- duction, maximisation of nutrition per acre and remunerative farmers’ incomes per acre demands that farmers shift from technologies created for corporate control and maximisation of corporate profits to eco-friendly, farmer friendly technologies such as organic farming.

## Solvency

### Inherency

#### In the status quo agriculture is shifting to an industrial model

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

In India and elsewhere, globalisation of agriculture, under the triple pressure of World Trade Organisation (WTO) rules, World Bank-IMF conditionalities and structural adjustment programmes, and economic and political interests of the national elite is destroying the land and those who labour on it, small peasants and landless workers. The very viability of a national agriculture and food security system is being ruptured as high cost, capital intensive, corporate farming displaces small farmer centred agriculture, and trade replaces food rights of the poor as a policy priority. A reading of the new agricultural policy brings out three core areas of policy shift that are destroying the fragile fabric of ecological security, livelihood security and food security, creating ecological devastation and deepening hunger and poverty. These are: (i) changes in property rights to natural resources—land, water and biodiversity (including seeds) on which agricultural production rests; (ii) changes in technology, especially new genetically engineered crops and seeds (GMOs) which promote use of agrichemicals, increase costs of production for farmers and corpor- ate control over agriculture policies and practices; and (iii) changes in trade regimes, privileging and liberalizing exports and imports, thus undermining national food security, farmers’ livelihood and food rights of the poor.

goods supported by financial, technical, and protective policies in developed countries. And just as the 1897 British Royal West Indies Commission and the policies ofthe Plantation School responded to crisis by calling for support of the small farmer for domestic production, the current global food crisis resulting from unfair trade may require the success of similar efforts.

### Shift Coming---Bottom Up

#### Policies that help

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

7. Practices that are creating another future for food Amidst the tragedy of farmers’ suicides and hunger deaths induced by policies of globalisation, another agriculture is being born in the country, building on the knowledge and wisdom of an agriculture that has survived over millennia and sustained millions for livelihoods and food. Ecological agriculture and organic farming are transforming the negative economy of high input industrial agriculture into a positive economy based on internal inputs. Direct marketing and fair trade are increasing the incomes of farmers and bringing consumers safe, healthy and affordable food. A number of initiatives in various parts of the country like Navdanya and its partners across twelve states are reversing the hopelessness of highest seeds with their own seeds of hope. The ‘‘Living Democracy’’ movement is committed to keeping seeds, biodiversity and knowledge of the commons and creating a Bija Swaraj—Seed Sovereignty. The national Jal Yatra and the Jal Sansads are spread- ing the movement to conserve water and defend community rights. The seeds of Jal Swaraj are being born from the crisis triggered by water destruction and water pri- vatisation. Community seed banks and biodiversity conservation initiatives have saved seeds, and through them the freedom and prosperity of farmers. The people’s movement in Ralegaon Shindi, Maharashtra had single-handedly reversed desertification and economic collapse. Local residents had built water harvesting systems made up of small dams, and they are now growing crops worth $146,000– 188,000 dollars a year. In Gujarat’s 13,000 water-starved villages women members of water councils are taking the lead in creating water-harvesting systems. The people’s investment in water conservation has also helped recharge ground- water, fill rivers, and increase crop production. For instance, in 1994, the Arvari River came back to life as result of recharge by 500 johads, the traditional tank system for water harvesting. Similarly, Ruparel, once a dead river, has been flow- ing since 1994 and is now the leading source of water for 250 villages. It was replenished by 250 johads. In the Alwar district of Rajasthan, the youth organis- ation Tarun Bharat Sangh mobilised people to rebuild johads for which local com- munities contributed $2.2 million and built 2,500 tanks in 500 villages. The collective decision-making process over construction, maintenance and use of water system has helped prevent conflicts. Tarun Bharat Sangh received in 2001 the Magasasay Award for its work in water conservation. The above trends show that agriculture which protects the health of the soil, health of plants and animals and health of people is emerging. This agricultural revolution is not just happening in India. It is taking place worldwide. Two hundred sustainable agriculture initiatives in 52 countries which have grown over the past decade, covering 9 million farmers and 29 million hectares has led to an average of 93% increase in per hectare food production [4]. This is much higher than what the green revolution achieved, or what genetic engineering claims to offer. Ecological, sustainable agriculture, does not just protect the environment and small farmers livelihood, it also produces more food. A better agriculture is not just possible, it is happening. The future of food is emerging on small, ecologically managed biodiverse farms.

## A2 Util/Das

### A2 Econ DA---Reject development

#### Reject the neg’s notions of development as salvation, recognizing alternative modes of living collectively. Only a reconception of what living well is and can be frees us from calculations of utility that prevent meaningful engagements and experiences.

Mignolo 9 - Walter Mignolo, Professor of Literature and Romance Studies at Duke University, “The communal and the de-colonial”, Turbulence: Ideas for Movement, No. 5, Decembe4 2009, pg. 31, TB //DDI13

But what exactly, then, is the communal? Patzi Paco refers to collective rights to the use and management of resources, at the same time as he speaks of the rights of groups, families and individuals to share in the beneﬁ ts of what is collectively produced. He makes clear that, while the communal has its ancestral foundation in agrarian societies in the Andes, these characteristics have survived and adapted well to contemporary conditions. The communal system is open to ‘persons’, indigenous or not, as well as to diﬀerent types of ‘work’: in a communal system the distinction between owner and waged worker, as well as boss and employee in administrative organisations (banks, state organs, etc.), vanishes. To understand the scope of this proposal, it is necessary to clear our heads of the ‘indigenous = peasants’ equation that the coloniality of knowledge has imposed upon us, alongside the rhetoric of ‘salvation’. Moreover, the notion of ‘property’ is meaningless in a vision of society in which the goal is working to live and not living to work. It is in this context that Evo Morales has been promoting the concept of ‘the good living’ (sumaj kamaña in Quechua, sumak kawsay in Quichua, allin kausaw in Aymara or buen vivir in Spanish). ‘The good living’ – or ‘to live in harmony’ – is an alternative to ‘development’. While development puts life at the service of growth and accumulation, buen vivir places life ﬁrst, with institutions at the service of life. That is what ‘living in harmony’ (and not in competition) means.

### Extinction Scenarios Bad

#### Their impact scenarios are part of deliberate crises, manufactured to sustain the contradictory colonial system

Perrey 13 [(Shoshana Devry, National Science Foundation Graduate Research Fellow who has field research experience in tropical ecology and agriculture) “Food Sovereignty: A Critical Dialogue” INTERNATIONAL CONFERENCE YALE UNIVERSITY, Conference Paper #52, Sept 14-15] AT

Applying the coloniality of power perspective, I interject that the majority of the world’s small farmers who received food aid were of non-European descent. People of color encompass the majority of the global poor and hungry. Regions outside Latin America with histories of European colonial development have also resulted in racialized effect on poverty and hunger, disproportionately affecting POC globally: “Of the 854 million malnourished people in 2001 to 2003, only 9 million were in the developed world; East and Southern Asia and the Pacific accounted for 61% of the total . . . . while 206 million malnourished Sub Saharan Africa inhabitants represent 32% of the region’s population (IAASTD 2009).” I’d further extend that such a patriarchal relationship of food aid development contributed to the accumulation of capital in the hands of elites (of North American heritage), while extracting surplus labor from US laborers working the fields and factories, and accumulating debt from impoverished nations abroad. According to Friedmann (2009) the “novel mechanism” of food aid during the second food regime was dependent on specific institutions of the Bretton Woods monetary system and their effective influence over the US dollar. The role of the US dollar has pivotally stabilized US markets while destabilizing others, serving as an instigator of crisis. Although US hegemony has prospered under the proliferation of the dollar as the global currency, trade and fiscal deficits reduce the power of the dollar, suggesting that US hegemony is declining. And, as crises continue to be manufactured as an insurance policy for hegemonic nations, we’ve seen from Britain’s historical trajectory following the first food regime and World War I that new currencies were affected by wars and depressions (Arrighi and Silver 1999). As a whole, the hegemony of US & European institutions has implicated the agri-foods complex into the cycles of capital’s crisis carousel. Since the demise of the Bretton Woods system, humanitarian and emergency aid, including food aid, has functioned via a system rooted in generating crises. Crisis cycles are a result of capital relations changing character throughout the various food regimes, and are an activity of state/corporate hegemony. The food regime ‘method’ is useful for interpreting the historical conditioning of financial and productive shifts, and also for understanding food regimes’ capitalistic tendency to profit while sustaining cyclical crises. Since politics are considered null in the status quo systems perspective of the food and agriculture industry, food sovereignty restores the urgent attention to rights and political agency that food regimes analysis saliently exposes. Indeed, the critical perspective produced from food regimes analysis underscores the importance of the generation of crises as a process of hegemonic state formation, and the resulting food countermovements that, in part, are retaliating against state-corporate control. Harvey (2011) reminds us that capitalist crises are engineered to rise and fall on internal contradictions because of the dictum that capitalism depends upon the cyclical retrieval of surplus labor value amassed from underproduction and overconsumption. In his book, the Enigma of Capital, Harvey states that, “crises assume a key role in the historical geography of capitalism as the ‘irrational rationalisers’ of an inherently contradictory system. Crises are, in short, as necessary to the evolution of capitalism as money, labour power and capital itself (2011).” This helps to explain why, when discussing ‘the food system’ it is a common mistake to think of an ecological equilibrium cycle of production and distribution that has relatively equitable weights of inclusion amongst voluntary or socially “rational” participants. Generating crises does not require rationality, but rather, an unevenly distributed disturbance. I argue that the advantage of the food regime analysis is it accordingly recognizes the uneven development of capital accumulation amongst participants, and further, has the potential to recognize the racial division of labor as a consequence.

## A2 K’s

### A2 Wilderson K

#### Perm do both – your authors and evidence are all about US focus, not India

#### The aff is a better way to decrease oppression and injustice –

#### Historically, oppression in India has been imposed through colonial empires, which imposed oppressive rule. The aff solves root cause by destroying the grip of neocolonialism on India

#### Poverty is a structural, material harm that affects the livelihoods of billions in India – Okereke in the case indicates that this is a prerequisite to any rights.

#### Capitalism is the monolithic root cause to all forms of oppression – that means the aff focus is more productive.

Kofi 14 [Exploring Race in Predominantly White Classrooms: Scholars of Color Reflect. Edited by George Yancy, Maria del Guadalupe Davidson. Routledge, Feb 18, 2014. Chapter 13 – “Race In(Out)side the Classroom.” Nana Osei-Kofi] AJ

As we move collectively to imagine alternatives, to thank of new worlds, it is imperative that we understand the academy as part of the larger political economy. To think of higher education anew requires that we understand and make transparent the ways in which "educational, cultural, social, and economic policy and practices are connected to the multiple relations of exploitation and domination—and to struggles against such relations—in the larger society."36 As I have discussed elsewhere, "this means that, in looking at the United States, it is necessary to recognize capitalism as the overarching structural force in society."3' When, for example, courses in Black studies or queer studies are canceled for failing to meet institutional enrollment targets, it is important to see not only how these areas of study are devalued as a function of racist and homophobic values and beliefs, but also the ways in which these values and beliefs intersect with neoliberal ideals to dismantle oppositional spaces in the academy. Moreover, attention to political economy also illutominates how the connections between conditions within the academy and those within the larger society, particularly in terms of the creation of wealth for a small group in society, drive decision-making in all spheres at the expense of the welfare of the majority.

#### Intersectionality – Bailey 98 has 2 unique warrants for why oppression is a result of our prense in multiple communities that do not have fixed boundaries – exclusive focus on anti-blackness fails to solve and crowds out more important discussions

## WIP

### Commodification

#### Industrial agriculture treats food as a commodity – moral obligation to give control of food to the communities who need it

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

A salient feature of these agreements is that food is treated as a commodity rather than as crucial for the survival of all humans. Given that food is a basic necessity of life, unlike other commodities such as tires or computers, many governments and civil society movements believe that such policies are grievously misguided. As Lori Wallach of Public Citizen puts it, “Food—like water—is not an optional product that consumers may choose to purchase: food is the basis of life. People without food die, while people without cars or tires walk and people without tin ore use local materials.”3 As such, many believe that governments have an obligation to ensure food as a basic human right. The result of this shift has been a loss of livelihoods for millions of farmers, and the depression of rural communities; an increase in hunger in many parts of the globe; compromised nutrition and safety of food; increased environmental destruction; and the control of food production and distribution by an ever-smaller number of giant global agribusinesses. (See Box 1.) These are some of the outcomes of this shift: ❖ Local self-reliant food systems that had provided food and livelihoods for millions, and a secure food supply, are rapidly being replaced by corporate control—often foreign corporations—over farm inputs, energy, crop commodity prices, food production, and marketing. These corporations value profits and export trade over the needs of local communities for food and sustainable products. ❖ Industrial agriculture eliminates diverse food production for local needs, replacing it with large scale monocultural production of one or two crops appropriate for export markets; thus, diminishing natural biodiversity—of micro organisms, plants, insects, and animals, and diminishing local food supply as well. ❖ Heavy use of industrial agricultural processes, including pesticides, chemical fertilizers and fossil fuel-based machinery are rapidly destroying the vitality of the soil, polluting and over-using scarce fresh water, polluting the air, and harming wildlife and humans. ❖ The corporate introduction of genetically modified organisms (GMOs) and plants further destroys biodiversity and brings unknown, potentially catastrophic dangers via new forms of biopollution. ❖ The export driven model of globalized agriculture requires a huge increase in transport infrastruc- tures —roads, ports, airports, energy grids—often constructed at the expense of nature and in defiance of global energy shortages. ❖ Massive shipments of agricultural commodities across great distances requires additional fossil fuel usage, refrigeration, packaging, etc. and fosters mobility of exotic plant and animal species, and the spread of pests, viruses, bacteria, and disease. ❖ Control over and access to the most essential elements of life—the commons—are being stripped away from local communities and given over to corporations (often via World Bank privatization schemes). ❖ Traditional knowledge of seeds, plants, and cultivation are being expropriated for profit, and patented by large corporations—a process known as “biopiracy.” ❖ Agriculture accounts for approximately 25 percent of carbon dioxide emissions; and 70 percent of nitrous oxide emissions.4

#### Direct colonialism might be over but coloniality remains

Montalvo and Zandi 11 [(Marcelo Felipe Garzo Montalvo, Planting Justice educator; and Haleh, co-founder and the Educational Director of Planting Justice) “the modern/colonial food system in a paradigm of war” Planting Justice] AT

Our experiences in the struggle for food justice have led us to explore what it means to exist in the modern/colonial food system in a paradigm of war. The term paradigm of war emerges from the decolonial ethico-political philosophy and religious thought of Dr. Nelson Maldonado-Torres. We find this term to be particularly useful to describe the lived experiences of coloniality, that is, the persistence of the colonial context in a world system that thinks itself post-colonial, or after administrative colonialism. Instead, by describing contemporary struggles as decolonial in nature, we are aiming to dismantle the coloniality that persists amidst post-colonialism: both within institutions of power that perpetuate the colonial worldview and within social movements that dream of better worlds. Sometimes these very movements, in their resisting oppressing, re-open the colonial wound itself (Lugones 2005?). Therefore, we use the term “paradigm of war” to refer to the political naturalization and cultural stabilization of settler colonialist ways of being. In this context, war is no longer a state of exception but the order of the day, as colonial relations of exploitation, domination and violence become ‘normal’ facets of everyday life. The colonial wound itself, as it were, remains open. A paradigm of war is a state of endless war, inaugurated through the conquest of the so-called New World and the enslavement of African peoples, and as we will argue, continues through our neoliberal moment of interlocking, late capitalist/corporatized industrial complexes: military, prison, academic, non-profit, food (See Appendix A). War becomes paradigmatic, that is, everywhere and always, in communities of color through institutionalized forms of dehumanization and control by settler colonialist populations. Our usage of a paradigm of war is, at once, an historical and contemporary diagnosis. By articulating the food system in a paradigm of war we are simultaneously pointing to the violations of the land/body connection perpetrated by historical colonialism – as a state of perpetual war – as well as its continuation in the post-modern/late capitalist moment where we find domestic state violence being enacted through the food system itself. In this paper, we argue that the modern/colonial food system has served as an important vehicle to initiate and perpetuate this paradigm of war, maintaining the colonial wound on the body and the land. We seek to expose how the food system shifts away from producing food as Life and instead commits everyday acts of war, performed and naturalized in the intimate spaces of colonialism’s perpetual enemies. We use the term “modern/colonial” to strategically challenge the linear narrative of modernity as progress. This is a device of decolonial theorist Walter Mignolo, as he reminds us that modernity is not without its underside, its darker side, that is, what he calls “coloniality” (Mignolo 2005). For many in our families, and the world at large, the modernization of the food system has meant displacement from ancestral lands and foodways, resulting in hunger and malnutrition on one hand, and disease and overconsumption on the other. When we shift the geo- and body-politics of knowledge and situate our analysis of the food system from its underside, we point to how the modern has always been enabled by the colonial, how modernization is always already colonization. The linearity of modern history occludes its own coloniality of power through erasure. It rationalizes violence as a necessary part of the forward march of progress that begins and ends in Western Europe. In this paper, we enact the decolonial turn by always articulating the modern/colonial together, reminding us of the dual nature of modernization, and therefore unearthing and re-centering colonial violence in our understanding of the food system. Native women’s voices and struggles inspire and situate our analysis in this project (Anzaldúa 2009; LaDuke 1999, 2005; ManKiller 2004; Mihesuah 2005; Smith 1999; Smith 2005). These voices are what make up the content of much of our paper. Our theoretical frameworks, however, will be placing these decolonial projects in conversation with critical theoretical interventions articulated inside and outside the dominant, imperial university (Marx 1887; Foucault 2003, 2008; Fanon 1954; Shiva 1997, 2005). Marx provides our understanding of labor and the structures of capital shaping relations of power between those who control the means of production and those who are consigned to exploitative conditions of work for survival. Marx traces how masses of people were legally forced off the land and ushered into urban areas, creating conditions by which labor becomes exploitable and dispensable. The historical processes that Marx traces are important in understanding what has produced the conditions of alienation and dispossession between people and the land, which characterizes the modern/colonial food system. Foucault’s notion of a biopolitical order – in which modern nation-states regulate their subjects through numerous and diverse techniques for achieving the subjugation of bodies and the control of populations – evidences how oppression shifts within the modern/colonial food system, becomes invisibilized within structures of liberal governmentality and the discourse of the state of exception. This shift, from dominant power that seeks to “make die, and let live” to a biopower that “makes live, and lets die” is one that the modern/colonial food system mobilizes in order to perform a paradigm of war. We also draw on Foucault’s genealogical method to locate the history of the present in institutions of power and the matrix of industrial complexes that interlock within the modern/colonial food system. We take up Fanon’s sociogenic principle as a theoretico-praxis of decolonization. For Fanon, sociogeny is the relation between the individual and the social structure, between the colonial subject and the colonial world itself. We mobilize Fanon’s understanding of how, “in the colonial context what happens at the level of the private and the intimate is fundamentally linked to social structures and to colonial cultural formations and forms of value (Maldonado-Torres 2008: 127).” The social movements for food justice/food sovereignty echo this decolonial critique, as they reclaim the spaces of the garden, the farm, the kitchen, and ultimately, the body and the land. Food justice enacts this Fanonian decolonial praxis and interfaces with our understandings of spiritual activism, as a mobilizing political agency through inner work/public acts (Anzaldúa 2009).

#### Really vague card that says food system is violent

Montalvo and Zandi 11 [(Marcelo Felipe Garzo Montalvo, Planting Justice educator; and Haleh, co-founder and the Educational Director of Planting Justice) “the modern/colonial food system in a paradigm of war” Planting Justice] AT

Vandana Shiva’s activist research is concerned with processes of colonial violence at work from seed to body, from Columbus to Monsanto. We extend her observations regarding genetic modification and ‘biopiracy’ to frame our genealogy of the modern/colonial food system in a paradigm of war. As she states: …five hundred years after Columbus, a more secular version of the same project of colonization continues…The principle of effective occupation by Christian principles has been replaced by effective occupation by the transnational corporations supported by modern-day rulers. The vacancy of targeted lands has been replaced by the vacancy of targeted life forms and species manipulated by the new biotechnologies. The duty to incorporate savages into Christianity has been replaced by the duty to incorporate local and national economies into the global marketplace, and to incorporate non-Western systems of knowledge into the reductionism of commercialized Western science and technology (Shiva 1997: 2). This group of theories regarding power, oppression and liberation frame the stories we share throughout this paper. The story of amaranth begins our journey, illustrating the paradoxes and plunders of production and processing. Following this sacred grain’s history of conquest, commodification, and resistance allows us to map the contours of production and processing in the modern/colonial food system. As this grain enters the market, we enter with it, to shift our gaze towards understanding the ways in which distribution centralizes power and control through colonizing economic relations of exchange. The result of this inequitable distribution of food and Life is dis-ease, the symptom of consuming a diet of genocide, bought and sold at a price. From Life in Nature, comes food, seeds, as reproduction. From products, in the market, comes Waste, as premature death. All along this journey are dynamics and relations of oppressing resisting, movements and moments that we trace together, now. The Story of Amaranth: Ceremony, ‘Lost Seed’, ‘Super Weed’ Spilling over with rich grain, deep hues of red and purple, flat green leaves, red veins, matching in taste and color with the red flint corn, sacred crops imitating each others beauty (Nabham, Food Traditions). The soil is wise, remembers its seeds, its crops, old friends, meeting again, in warm embrace. Amaranth is ancestor, teacher, conscientious objector to the war on the land and seed. Amaranto has fed the peoples of this land for over 8,000 years, native, deep, staple crop of the Mexica-Nahua, huiuhtli, sister of maiz, frijól, symbol of strength, power, royal, ritual object and cosmic offering. What the Europeans saw as cannibalism, a key marker of savagery, was in fact sacrifice, ritual offering and honoring of the body for the sun, for the earth. In Tenochtitlan, women mixed the grain with honey and human blood, boiled over open flame, mixed with the toasted semillas to make cakes, galletas taking the form of Huitzilopozchli, sometimes called the god of war, embodied in father sun, born fully grown and ready for battle, ready to defend his goddess mother Coatlicue. When amaranth took this form of sacred object, a source of spiritual power, perceived as cannibalism, it became a key target of conquest. As one healing food encyclopedia illustrates, The Spanish conquistadors, who were appalled by this practice which they considered a parody of the Holy Communion, forbade its use after conquering Montezuma in 1519. Reasoning that eliminating amaranth would also eliminate human sacrifice, they burned every crop of amaranth they could find and forbade growing the grain. The punishment for possession of amaranth was severe – having even one seed was punishable by chopping off the hands. As a consequence, amaranth quickly became a ‘lost’ seed, a status that lasted for hundreds of years (Murray and Pizzorno 1997: 337). But amaranth survives, protected by seed savers and brought through the Sierra Madre, and the majority of what is now the American Southwest. A few varieties also made it back to Europe, de-spiritualized, de-politicized, commodified as ornamental flowers, leaves to be admired for their color alone, un-acknowledged as nutritious food for the body, nor the spirit. In its travels, amaranth also found new meanings in India and China, where growing populations honored the crops nutritional benefits as a complete protein, as a medicine, and cosmetically, as a deep red dye. An enemy of Christendom, a false idol, sacrilegious; amaranth was banned for its sacred properties. Not just to starve the body, but to kill the Indian, to disrupt the spiritual realm of Native life, destroy cosmovisions of sustenance and nourishment directly from the land. Later however, following WWII, the grain becomes an enemy of another epistemic/political order: Western Scientific, Capitalist biopower, where we locate the paradigm of war’s neoliberal turn (Foucault 2008, Shiva 1997, Marx 1887). From the colonial/capitalist gaze, amaranth’s resilience and fertility as a crop (with up to 500,000 seed from a single mature plant) is not seen as strength, but as a danger to monocultural production, and therefore profits. In the latter half of the 20th century, as the modern/colonial food system is rapidly industrializing through the so-called Green Revolution, late capitalist US Empire is simultaneously re-arranging the global war machine. The enactment and conquest of the Green Revolution is a story of explicit attack on the land, through obstructing waterways, saturating the soil through heavy irrigation, dumping chemical and petroleum-based inputs, and destroying biodiversity through monocultural designs. These are methods that we understand as a war on food, on Life. Long-time critic and activist against the Green Revolution, Vandana Shiva, reminds us that: Food production technologies have undergone two generations of change over the last few decades. The first shift was the introduction of chemicals in agriculture under the banner of the Green Revolution. Toxic chemicals used in warfare were deployed in agriculture in times of peace as synthetic fertilizers and pesticides. Agriculture and food production became dependent on ‘weapons of mass destruction’ (Shiva 2005: 153). During this period, the genealogy of the modern/colonial food system transmutes to become a key articulation between the military and agricultural industrial complexes of late 20th century U.S. Empire. The ethnobotanic work of Jonathan Deininger Sauer is illustrative of this turn. While writing his dissertation on the newly problematic amaranth grain through the University of California, Sauer takes a break from graduate studies to work for the Pentagon as a weather and botany specialist. Demonstrating the facility with which one can shift from the military to the agricultural industrial complexes, Sauer identifies how amaranth has “moved uninvited into clearings and fields; with the unintentional help of man they have become aggressive and widespread weeds (Sauer 1950: 561).” In a discourse that bridges military and agricultural lexicons, Sauer sees the amaranth as a genus to be “too massive a problem to be attacked here (Sauer 1950: 561).” “Uninvited guests”, “unintentional help of man”, “aggressive weeds”, “huge problem to be attacked”, Sauer could be speaking of the grain amaranth as easily as he could be talking about the racialized enemy Other, whichever enemy of war was in fashion for Western Man, from the Indian/Savage to the Muslim/Terrorist. Here we resist a particular colonizing technology in the Western, scientific, positivist imaginary. The feminization of Nature, within a heteropatriarchal worldview, occludes Nature’s agency, denies her power in lieu of masculinist understandings of control and domination. Carolyn Merchant and Vandana Shiva also trace this impulse in Western Science, a shift from Terra Madre to Terra Nullius, towards the “transformation of nature from a living, nurturing mother to inert, dead, and manipulable matter (Shiva 1997: 47).” Cherrie Moraga and Andrea Smith offer methods of critique that intervene in the domination of Nature and women by the West. As the racialization and conquest of the “brown and female body” is the racialization and conquest of the “brown and female earth”, the women of color movement to end sexual violence joins with the movement to protect the rights of mother earth. In this context of eco-feminist movements, amaranth resists, embodies resilience, the ability to adapt, survive, and fight back. Considered to be a ‘super weed’ in the genetically-modified fields of monocultural production – where the land is abused in order to overproduce cotton, soy, wheat, corn and other crops as commodities for the global market – amaranth is comrade, engaged in the spiritual/political struggle to decolonize the land. Resisting petrochemicals, herbicides designed to destroy native plants, amaranth is reclaiming hundreds of acres of land being mistreated through the modern/colonial food system in a paradigm of war. Plant biologists based in the modern/colonial, imperial research university are hired to produce ‘knowledge’ that is designed and packaged to defend agribusiness and its domination of the land. Scientists in these fields lament amaranth’s “cross-resistance to chemically-dissimilar herbicides and to herbicides with different modes of action (Gossett, et. al. 1992: 587).” Recent campesino blogs celebrate the “counterattack of nature” as amaranth “devours” fields of transgenic corn and soy, forcing the Monsanto Corporation to abandon over 12,000 acres of land, with an additional 120,000 acres marked as hazardous areas (Casa Europa 2009; Pijama Surf 2011). What do these stories of amaranth tell us about the larger transformation of agricultural production as a result of the conquest of the Americas? Similarly, how does amaranth teach us to resist, to adapt, to decolonize? Amaranth is a sacred crop, a staple not only for physical nutrition and sustenance, but for spiritual nutrition as well. A food of the gods, a key interlocuter between the body, the land and the cosmos. Amaranth provides a complete protein, a rich source of dietary fiber and minerals such as iron, magnesium, and especially manganese, an essential trace nutrient in all forms of life, which benefits our bones, kidneys, liver and human brain. This story of amaranth, from ceremony to super weed, could be told about nearly any sacred crop, namely corn, potatoes, beans, and chocolate, to name a few. These histories teach us how the paradigm of war seeps through the pores of social structures and into the intimate spaces of our kitchens, gardens, and bodies. In many ways this echoes Fanon’s assertion in Black Skin, White Masks of how colonial structures produce colonial cultures, ways of (non)-Being that reproduce coloniality itself. Thus, through the modern/colonial food system, the paradigm of war represses the sacredness of our food and its journey from seed to body. In dismembering our connection to the land, the modern/colonial food system brings this violence into the body through consuming perverted, embalmed corpses of what used to be food. Disease and hunger, of the body and of the land, are two sides of the same coin, two effects of the modern/colonial food system in a paradigm of war. It is here that we must turn to distribution and consumption, and amplify indigenous struggles that resist the forceful and violent colonization of Native identities: from producers to consumers, stewards to shoppers, from farmers to diabetics. Distributing Dis-ease, Consuming the Colonial The emergent fields of food studies and sub-field of food justice studies are currently taking shape around critiques of the neoliberal, globalizing, capitalist food system in conversation with grassroots movements worldwide for food sovereignty. Authors and activists rightly point to distribution as a site of intervention into existing power structures that perpetuate food injustice. This analysis tells the story of the negative consequences of post-WWII development trends, such as the formation of “food deserts” through “grocery store redlining”: the corporate-driven, racialized movement of food distribution stores from “distressed areas” of the inner cities to the “serene suburbs” (Morales 2011: 151). Our aim here is to contribute to this literature from a decolonial, spiritual activist perspective, and evidence the colonial violence present throughout the food system in a paradigm of war. This section begins with the next stage in our food systems approach to strategizing food justice, that is, the methods of distribution in a modern/colonial food system in a paradigm of war. We engage with interventions emerging from communities of color, and native communities in particular, to evidence how processes of genocide and conquest are being contested through food. The food system perpetuates itself, and normalizes violence against native women’s bodies and the land through land dispossession, destroying native foodways and selling a diet of genocide on the market for corporate profits. In particular, we are concerned with the commodification of food, and therefore of the land, the seed, reproduction, Life itself. We hope our analysis makes clear that underneath Monsanto is Columbus, below Wal-Mart is the albóndiga. They exist simultaneously, the colonial violence and the capitalist processes of commodification. But we refuse to collapse these categories of oppression, that is; they do have distinct technologies that we need strategic precision in building our movements to support Life and land. To decolonize, is to uproot, the colonizer/colonized relationship itself, in our bodies, in social structures. In our communities, we need new ways to (re)distribute food and health, provide access to those excluded from Life through the modern/colonial food system. We must also, however, shift our values, our culture, and our principles, in order to challenge a worldview, a world system, that not only produces ‘food deserts’ for academics to write about, but also produces death and dis-ease in our families, in our communities. How this diet of genocide is distributed is our main concern here. We identify the emergence of the albóndiga – a controlled market for grain in 16th century Spanish America – as an illustrative institution in the genealogy of the modern/colonial food system in a paradigm of war. While we cannot substantiate evidence of amaranth grain being implicated in this history, the sacred crops (namely corn) brought into these storage and distribution sites surely underwent similar colonizing and commodifying processes. The albóndiga (alhóndiga in Old Spanish) is the space where “the gradual centralization of grain policies” culminates, where, “according to theory, the sale of grains in a public market, under the supervision of municipal officials, on city property, and with a published schedule of prices,” takes place. This regulation and control of grain in the New World was designed to “eliminate abuses” (Super 1988: 48). ‘Abuses’ here refers to the process of resisting colonial foodways being placed on indigenous lands and worldviews. From the beginning, the market itself is a colonial introduction, an experiment in conquest, a foreign idea and structure of power, struggled over and designed in Western Europe (notably through the Spanish Reconquista and expropriation of peasant land in England), to be exported and strengthened through the trade of bodies and land across the Atlantic, in the so-called New World. Marx traces in Das Capital how land dispossession plays a central role in the formation of capitalism. Initiated in the late 15th century, the processes of the expropriation of people from the land, the centralization of agricultural control, and the homogenization of crops immediately produced hunger and poverty. This in turn produces “a body of men who earn their subsistence by working for others, and who will be under a necessity of going to market for all they want” (Marx 1867: 750). The albóndiga must be situated in this modern/colonial context, in which proto-capitalist conquistadores, in the spread of Christendom, colonized Native trade relations, forcing them into the container of the market. As in Europe, the formation of the market in the Americas was met with resistance, from below. Indigenous peoples, refusing to be assimilated into colonial/capitalism as consumers, preserved traditional economic and trading systems, continuing to buy and sell grain “outside the market.” Cautious of the colonial control of such spaces, they resisted the imposed order, where “hoarding and speculation” were common distribution practices (Super 1988: 50). Today, when the poor and dispossessed refuse to take part in the global market, economists express concerns over the under-regulated, “informal sector.” In Mexico City, Tenochtitlan, over half of the economy is still considered “informal” (Garcia-Navarro 2006). Mexico City is one of the birthplaces, along with Lima, of the albóndiga itself, where it was first introduced in 1567, and began trading commodity grains in 1581 (Super 1988: 48). As another example of the ways in which colonialism and capitalism co-exist, are inextricably bound together, we see Wal-Mart, the super-albóndiga of the 21st century, dominating Mexican markets, continuing to turn peasants into buyers, producers into consumers. It is the market itself that introduces this violence through the modern/colonial food system in a paradigm of war. To be a consumer, is to be a displaced person, where our sacred right of connection with the earth through our food is denied. As the albóndiga is Wal-Mart, it also the commodity store, the main food distribution site for Native people within the settler colonial U.S. nation-state, following the Reservation Act of 1850. Winona LaDuke grounds, shifts Marx’s analysis of capitalism. From an indigenous perspective, colonial/capitalism embedded itself in the modern/colonial food system. She notes, The work of planting and nurturing seeds – calling forth and honoring life on the land through an intricate ceremonial cycle – has been a mainstay of indigenous cultures...As colonizers drove Indigenous peoples from our territories, we were cut off from access to traditional foods. Starvation and disease became rampant. The forced reliance on inadequate government rations, often called ‘commodity foods’, only changed the starvation from quick and obvious to hidden and slow (LaDuke 2005: 191). LaDuke situates our argument in the racialized experiences of native peoples, evidencing the modern/colonial food system as a strategic space to invisibilize and normalize the everyday violence of the colonizing process (paradigm of war/biopower). For LaDuke and many other native activists, type II diabetes is an omnipresent dis-ease, a symptom of consuming the colonizing diet, a clear mark of the colonial wound.

#### Diabetes and health issues

Montalvo and Zandi 11 [(Marcelo Felipe Garzo Montalvo, Planting Justice educator; and Haleh, co-founder and the Educational Director of Planting Justice) “the modern/colonial food system in a paradigm of war” Planting Justice] AT

The American reservations’ commodity stores are distributors of this disease, key institutions in the modern/colonial food system in a paradigm of war. In the early 20th century, as settlers continued to encroach on native lands of the Southwest, “the US military began distributing free commodity foods to Native Americans. This surplus food – white flour, cheese, refined sugar, lard, canned foods – is a diabetic’s nightmare. It was not until 1996 that fresh produce was offered in the program. And authentic traditional foods are still not included (California Newsreel 2008: 5).” Native food activist, physician, and author, Devon Mihesuah, places diabetes and other diet-related disease in the context of a larger genocidal reality. For Mihesuah, genocide is not only “the loss of land; the loss of population through war, sterilization, disease, (and) policies,” but includes premature death as a result of: …poor health, changing cultures, and removal-relocation; a dependency on material goods that result in competition between tribes; alcoholism and other forms of self-abuse; a change of environment that includes a loss of plants and animals; gender role change (the loss of respect for females’ important social, political, economic, and religious roles and the loss of men’s hunting roles);…a dilution and loss of cultural knowledge; dilution of indigenous blood…depression and other mental problems associated with being disempowered; internalizing colonial ideologies that result in feeling confused about identity, feelings of inferiority, apathy, and helplessness; the continued subjugation of Natives because the ideology of Manifest Destiny is still in effect; the loss of intellectual rights (theft of knowledge by scholars and others for the purpose of personal gain); and continued monitoring of tribal governance policies and procedures by the federal government. (Mihesuah 2005: 49-50) This analysis has led many to draw cross-cultural connections between communities of color around the world, particularly indigenous peoples, and their shared experience with alarming rates of type-II diabetes. As the important documentary film series, Unnatural Causes, makes clear, “Pacific Islanders, African Americans, Aboriginal peoples in Australia, all suffer from Type II diabetes at rates double or triple the national averages (PAGE).” In the film, Epidemiologist S. Leonard Syme of UC Berkeley’s School of Public Health, asserts that these communities “have totally different histories. They are all different populations, and yet they all have the same manifestation…And in every case, we’re talking about people who have been dispossessed of their land and of their history. They haven’t been able to re-create it. In all these far-flung parts of the world the social circumstance of being ripped from roots ends up with the same manifestation of disease” (California Newsreel 2005: 3). What is significant for us as food justice activists is how LaDuke and Mihesuah take up food sovereignty as an aspect of the struggle for sovereignty at large. Today, these native woman activists are part of an expanding community of activists of color working for food justice across the globe. Alongside LaDuke and Mihesuah, Gary Paul Nabhan, Lebanese-American ethnobotanist and native foods activist, tells the story of how many native people are healing diabetes by decolonizing their diets. He writes of a 12-day healing pilgrimage for native peoples of the Americas suffering from diabetes. Eating only indigenous foods for the entirety of the trip we witness how a return to the traditional foods of one’s own ancestry leads to rapid recovery. Trials from 10 days to 6 weeks have reversed many of the symptoms of Type II diabetes. According to Nabhan, “within 10 days, their weight and their blood sugar levels had been dramatically reduced, and everyone felt healthier. The changes began so immediately that several participants had to seek medical advice to figure out how to reduce the hypoglycemic medications they had been self-administering for years (Nabhan 2005: 182).” He emphasizes the holistic healing that is facilitated by this process, a process we highlight in spiritual activism as decolonizing the mind/body/spirit. We include his story at length: “The pilgrimage allowed us to clearly see for the first time all the damage that had been done to our homeland and its food system, damage that was echoed in our very own bodies. There was something else going on among my native American companions during that walk. The Seri, Papago, and Pima pilgrims frequently expressed that their cultural pride, spiritual identity, and sense of curiosity were being renewed. And so, a return to a more traditional diet of their ancestral foods was not merely some trip to fantasy land for nostalgia’s sake; it provided them with a deep motivation for improving their own health by blending modern and traditional medical knowledge in a way that made them feel whole.” (Nabhan 2004: 184) Public health and dominant epidemiological research fails to look at processes of colonization as determinants of diet-related disease. Through our method of exploring Native women’s writings and related texts, our intention has been to resist reproducing these methodological blindspots. Instead we point to the cultural and spiritual shifts that occur as a result of displacement from land and the taking of natural resources through force, sanctioned by imperial nation state’s rule of law. The return to ancestral foodways is an important decolonial move in resisting the modern/colonial food system through spiritual activism. We close this section with the healing wisdom of Dr. Terry Shintani, Hawaiian elder, doctor of Japanese ancestry, student of the healing traditions of his native relatives. Here he explains the connection between the decolonization of knowledge and decolonizing our health, our bodies, and the land. This diet isn’t something I learned at Harvard. It’s something that Hawaiians and their ancestors knew for thousands of years. They knew that food without mana – that is, without life force – is not going to support anyone’s health…. In traditional medicine, it is recognized that there is really only one disease that all of us must learn to resist: arrogance. It is simply arrogant to think that we can violate the laws of nature and get away with it (Shintani quoted in Nabhan 2004: 199). The food system – as modern, colonial, distributing genocide, consuming the land, processing bodies – produces anti-Life. Through this food system we are turned into consumers, torn from the land, dismembered from the sacred cycles of Nature, interrupting circles of reciprocity. Our relationships are disrupted. Where we desire to receive and give freely, we are compelled to take, and therefore, what we return is turned into waste. When we take, without giving, from the earth, through the food system, we produce waste. Nature, however, does not produce waste; it holds ecosystemic Life in order, with Life and Death in sacred relation, forming natural synergies, spirals and mixtures of darkness and light. Our journey through the modern/colonial food system in a paradigm of war continues, ends, begins again, with waste. Industrial waste has been a toxic weapon of war against native peoples in the form of environmental injustice. Toxic waste – left behind by industrial capitalist extraction and exploitation of native lands – greatly impacts, distorts, and interrupts the daily lives and foodways of native people. This fact problematizes our earlier research that demonstrates the benefits of returning to a native diet, because of existing obstacles to decolonizing our diets. The political structures of colonialism are such that they often occlude the possibility of having the choice to eat our heritage or not. Therefore, we must also include strategies to resist and decolonize the ways in which the modern/colonial food system perpetuates disease through its waste products; be they agri-chemicals, slaughterhouse waste, or heavy metals and plastics from processing and packaging pseudo-foods, to name a few.

#### Industrial waste

Montalvo and Zandi 11 [(Marcelo Felipe Garzo Montalvo, Planting Justice educator; and Haleh, co-founder and the Educational Director of Planting Justice) “the modern/colonial food system in a paradigm of war” Planting Justice] AT

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With other people of color they restore the land and resist the colonial project through the Environmental Justice movement. This movement weaves, embraces, and inter-connects with the movement for food justice in the late 20th and early 21st centuries. Winona LaDuke is an elder in both movement spaces, articulating these struggles as one un-entangled vision of recovery and healing through decolonization. Her work in collaboration with Katsi Cook, Wolf Clan mother and traditional midwife, organizer for the Akwesasne Mother’s Milk Project, is one that heals the food system’s wounds on the land, on the body, on the spirit. This project is centered on Mohawk land, at the US/Canada border, emerging to respond to the contamination of the local waters, wild life, and women’s bodies (LaDuke 1999). This work highlights the affects of the waste products from the modern/colonial food system. Cook explains how the Mother’s Milk Project works to “understand and characterize how toxic contaminants have moved through the local food chain, including mother’s milk (Cook in LaDuke 1999: 19).” She elaborates on the impetus, the need, for such a project: The fact is, that women are the first environment. We accumulate toxic chemicals like PCBs, DDT, Mirex, HCBs, etc., dumped into the waters by various industries. They are stored in our body fat and are excreted primarily through breast milk. What that means is that through our own breast milk, our sacred natural link to our babies, they stand the chance of getting concentrated dosages (Katsi Cook quotes in LaDuke 1999: 18 – 19). Compounding the structural injustices inherent in the reservation, a series of corporate polluters exploited and contaminated the land (most recently General Motors), further interrupting Awkasanse traditions. The native diet has been undermined on many fronts. Toxic chemicals from modern/colonial industry pollute native lands, with such agents as polychlorinated biphenyls, or PCBs, “one of the most lethal poisons of industrialized society.” PCB is “an insidious chemical known to cause liver, brain, nerve and skin disorders in humans, shrinking testicles…cancer and reproductive disorders (LaDuke 1999: 15).” The introduction of this toxic chemical has “completely disrupted (the) traditional lifestyle” and polluted indigenous foodways. Cook explains: Many of the families used to eat 20-25 fish meals a month. It’s now said that the traditional Mohawk diet is spaghetti. We feel anger at not being able to eat the fish. Although we are relieved that our responsible choices at the present protect our babies, this does not preclude the corporate responsibility of General Motors and other local industries to clean up the site…. Many of us bless the seeds, pray to corn, and continue a one-on-one relationship with the earth. (Cook in La Duke 1999: 20) This war on the body and the land, racialized/gendered as brown and female, is carried out through the modern/colonial food system in a paradigm of war. LaDuke points out “that a culture and identity that are traditionally matrilineal will come into conflict with institutions that are historically focused upon their eradication (LaDuke 1999: 11).” The struggle to decolonize emerges from this problem space, as the “process of remembering and restoring the relationship between people and the earth is a crucial part of healing the community from the violations of the industry in their way of life (La Duke 1999: 20).” Mohawk women are actively organizing to protest, resist and transform toxic waste in their communities. Working with native mother’s whose breast milk has become hazardous waste, they heal through recovering traditional aquaculture methods, caring for local fish in clean waters, waters that nourish and provide Life where the modern/colonial world has created waste and dis-ease. What we have found as organizers in the movement for food justice is the need to intervene and find more ways to transform waste into Life through spiritual activism. This is why Planting Justice reminds us to “Compost the Empire”.

#### Markets and trade are colonialist

Montalvo and Zandi 11 [(Marcelo Felipe Garzo Montalvo, Planting Justice educator; and Haleh, co-founder and the Educational Director of Planting Justice) “the modern/colonial food system in a paradigm of war” Planting Justice] AT

From the beginning, the market itself is a colonial introduction, an experiment in conquest, a foreign idea and structure of power, struggled over and designed in Western Europe (notably through the Spanish Reconquista and expropriation of peasant land in England), to be exported and strengthened through the trade of bodies and land across the Atlantic, in the so-called New World. Marx traces in Das Capital how land dispossession plays a central role in the formation of capitalism. Initiated in the late 15th century, the processes of the expropriation of people from the land, the centralization of agricultural control, and the homogenization of crops immediately produced hunger and poverty. This in turn produces “a body of men who earn their subsistence by working for others, and who will be under a necessity of going to market for all they want” (Marx 1867: 750).

#### Removed from nature

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### To do

#### -A2 Yields DA

The main argument used for the industrialisation of food and corporatisation of agriculture is the low productivity of the small farmer. But in terms of food and nutrition productivity per acre, in terms of efficiency in water use, in terms of cre- ation of livelihoods small farms are more productivity than large ones. Even the World Development Report (WDR) has accepted this fact [1]. Even biologically, small diverse farms have higher productivity than large monoculture farms as long as multiple yields are taken into account. FAO data on total farm output confirms this [12]. In India, a 0–5 acre farm had a productivity of Rs. 735/acre while a 35 acre farm had a productivity of Rs. 346/acre. The state of Bengal was showing the highest rate of growth of 6.5% for agriculture as a result of land reform, while the rate of growth for India was a mere 3% [9].

#### -See cite 9 – land prices

#### -Lack of imports

#### -Suicides o/w

#### -Unsustainable

#### -Food prices

#### -Access to food – India starves while the US grows fat

#### -People are eating less – more important than yields

#### -India famines > US famines

#### Impact work

#### -Don’t treat nature as a commodity

#### -Don’t sell the Ganga

#### -Poverty/starvation impact + caste system

#### -Biopiracy bad

#### -Seeds are part of India’s cultural heritage

#### A2 K

#### -Policy responses are appropriate

#### A2 other things

#### -International contracts bad – they’re coerced (either turns the NC or means the NC sucks); and not consented/benefit the people

#### Colonialism framework

#### Economic framing bad – use economic indicators as if they were equivalent to well-being

#### Find a solvency advocate

#### Fwk: NEolib? Colonialism? Anthro?

#### CP Blocks

#### A2 Repeal intellectual property rights (Patent (Second Amendment) Act, 2002; Protection of Plant Variety Protection and Farmers’ Rights Act, 2001; and the Biological Diversity Act, 2002)

### India

#### Land monopolies – neocolonialist, benefit corporations at the expense of the poor

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

Changes in property rights to natural resources: land, water, biodiversity Trade ‘‘liberalisation’’ policies are leading to the alienation of land, water and biodiversity from peasant communities and the concentration of their ownership in the hands of corporations. New private property rules created by W.T.O. under TRIPS (Trade Related Intellectual Property Rights) and GATS (General Agree- ment on Trade in Services) are leading to the enclosure of biological resources and water which have hitherto been common property. 2.1. Concentration of land ownership At the heart of colonial policies for extraction of revenues from agriculture was the introduction of the ‘‘zamindari system’’. Zamindari abolition was one of the most important steps taken in independent India and the most significant instru- ment of social justice was the land reform legislations in different states to ensure equitable entitlement to land and to prevent concentration of land ownership. Land reforms such as operation Barga which put land back in the hands of the til- ler were also introduced in Bengal. However, during the last ten years globalisation and economic reforms in agriculture have in effect meant an undoing of the earlier reform process guided by values of social justice and equitable distribution of resources. While the positive protections afforded to small farmers and poor con- sumers and to self-reliance in food for the country have been removed, the reform’ package has increased the tendency of centralised control over agriculture. The main argument used for the industrialisation of food and corporatisation of agriculture is the low productivity of the small farmer. But in terms of food and nutrition productivity per acre, in terms of efficiency in water use, in terms of cre- ation of livelihoods small farms are more productivity than large ones. Even the World Development Report (WDR) has accepted this fact [1]. Even biologically, small diverse farms have higher productivity than large monoculture farms as long as multiple yields are taken into account. FAO data on total farm output confirms this [12]. In India, a 0–5 acre farm had a productivity of Rs. 735/acre while a 35 acre farm had a productivity of Rs. 346/acre. The state of Bengal was showing the highest rate of growth of 6.5% for agriculture as a result of land reform, while the rate of growth for India was a mere 3% [9]. Under World Bank Structural Adjustment pressure, combined with the arrival of a new breed of absentee landlords or ‘‘zamindars’’—industrialists, agribusiness corporations, speculative investors—land reform laws in every state are being undone, alienating the land from small producers and cultivators, swelling the ranks of the landless, the dispossessed, the unemployed. For instance, Karnataka has amended the Land Reforms Act of 1961, which undoes the radical reforms that made the tillers the owners of land and prevented non-agriculturalists from becoming absentee landowners. Described as ‘predatory capitalism and legalised land grab’, these amendments reintroduce land leasing, allow non-agriculturalists and industrialists to own land, and remove land ceiling for aquaculture, horticul- ture, floriculture and housing industry. The government of Maharashtra has relaxed restrictions on conversion of agricultural lands to non-agricultural land. The agricultural Land Ceiling Act has been amended to permit large land holdings leading to skyrocketing land prices [9]. 2.2.

#### Water monopolies – super neoliberal/capitalist ideology where even water is a tradable object

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

Water privatisation, water monopolies Trade liberalisation is also leading to the privatisation of water and creation of water monopolies. Water is being reduced to a commodity, owned and traded by water giants—Suez, Vivendi, Bechtel, Thames-RWE. The World Bank policy paper on liberalisation of agriculture recommends the creation of ‘markets in tradable water rights’. It argues that ‘if rights to the delivery of water can be freely bought and sold, farmers with new crops or in new areas will be able to obtain water pro- vided they are willing to pay more than its value to existing users, and established users will take account of its sale value in deciding on what and how much to pro- duce’ [15]. This institution of tradable water rights is a guarantee for diverting water from small farmers to large corporate super farms. In the logic of the mar- ket, tradable rights have a tendency to be sold to the highest bidder and hence lead to water-power linked to concentration of wealth, and to over-exploitation and misuse of water, since those who deplete water resources do not have to suffer the consequences of water scarcity. Besides, aggravating the already severe ecological crisis in water resources, tradable water rights will destroy the social fabric of rural communities and create discord and disintegration. The social breakdown in Somalia can be traced, in part, to the privatisation of water rights according to the World Bank policy. Tradable water rights are based on the assumption that no ecological or social limits should be placed on water use. Such use without limits leads to abuse. For instance, the new Agriculture Policy of Karnataka talks of a shift from ‘‘top down to bottom up’’ approach. What it implies, however, is that the control over water resources will move upwards from small and marginal farmers to large corpora- tions and agribusiness interests who can buy up the ‘‘water equity shares’’ of ‘‘water users associations’’ and establish monopoly control on water. The massive $200 billion project of River Linking will also rob rural communi- ties of their riparian water rights. The project, the government claims, is justified on grounds of increased food security through increased irrigation. However, higher water use does not translate into higher food production or nutritional security. Green Revolution crops use 5 to 10 times more water than native vari- eties. Paddy and Sugarcane use 5 to 10 times more than millets, which provide higher nutrition. Food production could be increased five fold without increasing irrigation by shifting to water prudent but nutrition rich millets [13]. The sale of Ganga water to the French company Ondeo Degremont (subsidiary of Suez Lyonnaise des Eaux Water Division—the water giant of the world) for the Sonia Vihar water treatment plant in Delhi exemplifies the way privatisation of water is being pursued. 635 million liters a day of water would be made available from the Upper Ganga Canal, one of the oldest canals in Western U.P. While Delhi residents will benefit and the company expects to make Rs. 100 million (10 crore) per annum, mainly based on government guarantees as in the Enron/Dab- hol project, farmers of Western U.P. will loose Rs. 2 billion annually, the total ‘‘investment’’ by the company. This project will obviously affect the agricultural output and the food security of the region where the canal had been irrigating for more than one century [15]. The farmers are understandably agitated and the people staying in the region have opposed the project, asserting that the ‘‘Ganga is not for sale’’. 2.3.

#### Life and seed monopolies

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

Patents on life and seed monopolies Seeds and biodiversity, which have been the common property of farmers and local communities, are being transformed into private property of a handful of corporations—Monsanto, Syngenta, Duport, Dow, Bayer. These chemical giants now control seeds as well as medicine. India, in fact, is losing its biological and genetic resources, the basic wealth of our country, and the biodiversity based knowledge of our local communities mainly through biopiracy. The piracy and patenting of our rich biodiversity by the MNCs, institutions and individuals especially from the Western world is inflicting great injury to the natural resources of our land and people. If this is not arrested by appropriate legislation and policy measures, there would be incalculable damage done to the nation and the coming generations [16]. India is a signatory of the two international treaties that have an impact on the nation’s biodiversity wealth and on peoples’ rights to use it and conserve it respon- sibly. These are the Convention on Biological Diversity (CBD) and the Trade Related Intellectual Property Rights (TRIPs) Agreement under the WTO. India on behalf of a group of countries including Brazil, Bolivia, Cuba, Dominican Repub- lic, Ecuador, Thailand, Peru and Venezuela has submitted a paper to the TRIPs Council of WTO, on ‘‘The Relationship Between the TRIPs agreement and the Convention on Biological Diversity and the Protection of Traditional Knowledge’’, calling for amendments in TRIPs to harmonise it with the CBD. However, at the domestic level, India has harmonised its Biodiversity laws to be consistent with the unamended TRIPs agreement. The Government of India has enacted new legislations to implement these international obligations which would far reaching implications for the lives and livelihoods of millions of Indian people. The new corporate-driven intellectual property rights regimes (IPRs), especially the Trade Related Intellectual Property Rights Agreement of WTO is leading to seed monopolies and biopiracy. Seeds have been evolved by nature and farmers over millennia. This collective, cumulate heritage is now either being destroyed by introduction of monocultures of non-renewable seeds or being hijacked by global corporations through patents and biopiracy. When a seed is patented or covered by breeders’ rights, farmers can no longer save or exchange seed freely. Seed saving and seed exchange in defined as a ‘‘theft’’ in intellectual property law. The Indian legislations that have an impact on biodiversity and people’s rights are: Patent (Second Amendment) Act, 2002; Protection of Plant Variety Protection and Farmers’ Rights Act, 2001; and the Biological Diversity Act, 2002. The coun- try has amended its Patent Act 1970 for the second time, in May 2002, since TRIPS came into force. The first amendment (undertaken in 1999) was to intro- duce exclusive marketing rights and mail box arrangement to implement Art. 70.8 and 70.9 of TRIPS. There are two amendments in the definition of what is not an invention that has opened the floodgates of patenting of genetically engineered seed. First, in Section 3(i) of the Patent Act, 1997, the word ‘‘plants’’ have been omitted. According to Section 3(i), the following is not an invention: ‘Any process for the medical, surgi- cal, creative, prophylactic or other treatment of human beings or any process for a similar treatment of animals or plants or render them free of disease or to increase their economic value or that of their products.’ The omission of ‘‘plants’’ from this section implies that a method or process modification of a plant can now be coun- ted as an invention and can hence be patented. Thus the method of producing Bt. cotton by introducing genes of a bacterium Bacillus thurengensis in cotton to pro- duce toxins to kill the bollworm can now be covered by the exclusive rights asso- ciated with patents. In other words, Monsanto can now have Bt. cotton patents in India. The second amendment has also added a new section 3(j). This allows pro- duction or propagation of genetically engineered plants to be counted as an inven- tion, and hence patentable. The section 3(j) excludes as inventions ‘‘plants and animals. . .including seeds, varieties and species and essentially biological processes for production or propagation of plants and animals’’. However, the emergence of new biotechnologies is often used to define production of plants and animals through genetic engineering as not being essentially biological. Without such a clear definition, 3(j) allows patents on GMOs patentability and hence opens the floodgate for patenting transgenic plants. The language of 3(j) is a verbatim trans- lation of Article 27.3 (b) of TRIPs into India law. Article 27.3(b) of TRIPS states: Parties may exclude from patentability plants and animals other than micro- organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, parties shall provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof. This provision shall be reviewed four years after the entry into force of the Agreement estab- lishing the WTO [10]. In the process the government has undone its own position on W.T.O. in the TRIPS review. Article 27.3 (b) has been under review since 2000. The whole of TRIPs council has to undertake review of TRIPS ‘‘in the light of any relevant new developments which might warrant modification or amendment of this Agree- ment.’’ The Biodiversity Act passed by the Parliament in December 2002 was to imple- ment India’s obligations under the Convention on Biodiversity Conservation (CBD) of the United Nations. The breakthrough achieved in the CBD was: 1. The need to conserve biodiversity; 2. Recognition of community rights and indigenous culture and knowledge (Art.8 (j)); 3. The prevention of adverse impact on biodiversity by mega development projects and by the release of genetically engineered organisms (GMOs) (Art 19.3), and 4. The potential to prevent biopiracy—the theft and patenting of indigenous knowledge related to biodiversity. Earlier drafts of the Bill had all four components. However, the draft passed by Parliament has no conservation element, no recognition of community rights to Biodiversity (even though this is necessitated by the Panchayati Raj Amendments of the Constitution and the extension to Schedule Areas) no regulation of adverse impacts. Given that the Environment Ministry, through the Genetic Engineering Approval Committee has been rushing ahead to commercialise genetically engi- neered crops like Bt. cotton in spite of known risks to biodiversity and in spite of exaggerated claims of benefits, it is clear that pressures were put on the ministry to drop clauses on regulating adverse impact in earlier drafts. The act is reduced to an act to facilitate access to biodiversity and indigenous knowledge for intellectual property rights. It facilitates and legalises biopiracy, instead of preventing it. All that biopirates will need is a cosy relationship with the National Biodiversity Auth- ority (based in Chennai). In the case of indigenous seeds and agricultural crops, the Biological Diversity Act has allowed full scope for biopiracy. Section (6) on intellectual property has an exemption 6(3): ‘‘The provisions of this section shall not apply to any person mak- ing an application for any rights under any law relating to protection of plant vari- eties enacted by Parliament.’’ Laws protecting plant varieties include the Patent (Second Amendment) and the Plant Variety Protection Act. Exemption 6(3) in the Biological Diversity Act in effect says that companies can take varieties farmers have evolved over millennia with unique traits of aroma as in basmati, salinity resistance, drought resistance, flood resistance, and patent the traits and qualities which are a result of farmers breeding. A global movement is calling for a ban on patents on life and recovering of the generic basis of life as ‘‘commons’’ which cannot be owned and privatised. The African countries have also made this demand in W.T.O.

#### Seed monopolies

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

3. Technologies of dependency and corporate control One of the key areas of globalisation has been the entry of global corporations in the seed sector. Control over seed is control over the food system. Besides con- trolling seed through patents and intellectual property rights, corporations like Monsanto and Cargill (now owned by Monsanto) are using technologies of dependency to force farmers into seed dependency. The new seeds are non-renewable— they yield a crop, but the crop is useless for seed because of hybrids based on male- sterility, and the impending introduction of ‘‘terminator’’ seeds—seeds which are engineered to be sterile. Corporations are breeding seeds that need chemicals—life herbicide resistant varieties. Even varieties like Bt. Cotton, need more pesticides because they are prone to more diseases and pests. 3.1. The case of Bt. cotton The commercial planting of Bt. Cotton in the country took place in 2002, but the cotton crop failed and the government did not clear its cultivation in North Indian states. Leading agricultural scientists, experts and academicians in India have acknowledged the failure of Bt. Cotton on the following counts: drying and falling of squares without boll formation, reduced boll formation, small sized bolls, very short staple length, very little resistance to boll worm, and requiring 2–3 sprays for control of boll worm, not resistant to dry spells, low yields (only 2–3 quintals for MECH 162), low market value and cost-benefit ratio not on par with non-Bt cotton. The then Health Minister Dr. C.P. Thakur, also observed that Bt cotton products could have long term environmental and health effects [8]. A study by the Research Foundation for Science, Technology and Ecology con- ducted in Maharashtra, Madhya Pradesh, Andhra Pradesh and Karnataka showed that not only did Monsanto’s cotton not protect the plants from the American Bollworm, but there was a increase of 250–300% in attacks by non-target pests like jassids, aphids, white fly and thrips. In addition, the Bt plants became prey to fun- gal diseases like root rot disease or fusarium. The Bt. cotton varieties gave very low yields. Even the staple lengths of whatever little cotton was produced were so short that it fetched a very low price in the cotton market [16]. Corporate seeds are creating a deep crisis for farmers because of high costs of seed, high dependence on costly inputs (pesticides, herbicides) and high levels of unreliability and crop failure.

# Advantages and Case Frontlines

## A2 Generic Negs

### A2 Manure Fertilizers Bad

#### Industrial farming spreads more manure through concentrated feedlots, and organic certification processes solve – your evidence is based on myths.

Charman 99 [Karen Charman, 99. New York-based investigative journalist specializing in agricultural, environmental, and health issues. “Saving the Planet With Pestilent Statistics,” Center for Media and Democracy’s PR Watch Newsletter 6.4, http://www.prwatch.org/prwissues/1999Q4/avery.html]

Dennis T. Avery, author of the tract "Saving the Planet with Pesticides and Plastic," proudly describes himself as a missionary. His mission: to protect and promote "high-yield farming to save wildlife." Besides writing a nationally syndicated weekly column for the financial newswire Bridge News, Avery is also the director of the Hudson Institute's Center for Global Food Issues. He travels the country and the world preaching his gospel of biotechnology, pesticides, irradiation, factory farming and free trade. According to Avery, it is the greenies and "organic frenzies" who threaten the world with famine and loss of habitat for their sacred wildlife. Why? Because farming without synthetic pesticides, petrochemical fertilizers and biotechnology would require too much land. Avery sees no problem with agricultural pollution, be it groundwater contamination, pesticide and fertilizer runoff, or even the mountains of stinking manure produced by the huge cattle, chicken and hog operations that plague increasing numbers of rural communities. He denies that there is any link between pesticides and cancer or other illnesses. In fact, he says, organic food is what will kill you. Last fall Avery began claiming that "people who eat organic and 'natural' foods are eight times as likely as the rest of the population to be attacked by a deadly new strain of E. coli bacteria (0157:H7)." This happens, he says, because organic food is grown in animal manure, a known carrier of this nasty microbe. He says his data comes from Dr. Paul Mead, an epidemiologist at the U.S. Centers for Disease Control (CDC), the federal agency that tracks outbreaks of foodborne illness. Avery continues delivering this message with op-eds that bear titles such as "The Silent Killer in Organic Foods" and "Wallace Institute Got it Wrong: CDC Data Does Indicate Higher Risk From Organic and Natural Foods." These editorials are disseminated by Bridge News to between 300 and 400 newspapers throughout the country and approximately 500,000 other subscribers here and abroad including government departments, central banks and businesses. I heard Avery's sermon live in June 1999 at the National Agricultural Biotechnology Council meeting in Lincoln, Nebraska. After his talk I asked him why he quoted the CDC as the source of his information when they deny having data attributing E. coli 0157:H7 outbreaks to organic food. He accused CDC of engaging in a "cover-up" due to pressure from environmentalists. Back home I noticed more than a couple of similar stories popping up in various venues. One particularly sloppy story, titled "Organic Food Creates Higher Risk for Food Poisoning," was posted on August 25, 1999 on USDA's National Food Safety Database by US Newswire, a service that electronically disseminates news releases. Though this story doesn't quote Avery, it quotes the CDC's Foodborne and Diarrheal Diseases Branch chief, Dr. Robert Tauxe, saying, "Organic food means a food was grown in animal manure." Tauxe denies ever making that statement and says he believes the rumor originated with Dennis Avery. After fielding numerous media queries on the subject, CDC took the unusual step on January 14, 1999 of issuing a press release stating, "The Centers for Disease Control and Prevention has not conducted any study that compares or quantitates the specific risk for infection with E. coli 0157:H7 and eating either conventionally grown or organic/natural foods." In addition, Tauxe says he called Avery to tell him to stop claiming that the CDC was the source of this allegation. Avery responded by telling Tauxe, "That's your interpretation, and I have mine." Avery's newest version of what happened with the CDC is that Dr. Paul Mead, an epidemiologist who works in Tauxe's division, gave him the information. Absolute bunk, says Mead. "What happened is that he called me up and announced that eight percent of the outbreaks of foodborne illness were from organic food. I took some exception to that and said I didn't know him and what his purpose was, but our data don't support that." Mead was chagrined to hear that a year after this conversation took place, Avery is still sourcing this phantom data back to him. Contrary to Avery's claim, E. coli 0157:H7 contamination from manure is less likely to occur on organic farms than in the factory farming system that Avery supports. Fred Kirschenmann is an organic farmer and board chairman of the private organic certification company Farm Verified Organic. He points out that a single cow produces approximately 10 times as much fecal matter as a human being. This means that a feedlot of, say, 5,000 head of cattle would produce the same amount of manure as 50,000 people. Yet modern conventional agriculture does not regulate the use of raw manure in food crops, Kirschenmann says, and farmers are spreading increasing amounts of it on their fields because it is too expensive to truck away and they don't have anywhere else to put it. Kirschenmann serves on the National Organic Standards Board which was charged by Congress to advise the USDA in formulating its legal standards defining organic food. "In organic systems, most animals have to have access to pasture, so they can't be concentrated in huge feedlots," he says, adding that Avery's charge that organic food is grown in manure is misleading, at best. "Organic farmers use manure, but virtually every certification organization I know of doesn't allow raw manure. Raw manure must either be composted or applied long enough in advance that the bacteria is no longer active," he said, adding that this requirement is being written into USDA's proposed rules. Dr. Robert Elder, a research microbiologist at the USDA's Meat Animal Research Center in Clay Center, Nebraska, specializes in measuring E. coli 0157:H7 in cattle. He says this deadly bacteria could be prevented from contaminating meat carcasses before they are ground into hamburger. "If you took meticulous time with every single carcass to vigorously clean it, scrub it, and wash it down, you could probably eliminate it," he said. But, Elder added, considering that the bigger plants are processing 3,000 to 4,000 animals a day--about 300 an hour--adequate cleaning is impossible. And that is a huge problem for the public. Elder's soon-to-be published research shows that in the summertime, when E. coli 0157:H7 levels peak, 80 to 100 percent of the feedlot cattle he tested carried the deadly 0157:H7 strain. Despite a public debunking of Avery's statements in the New York Times last February, his bogus claims continue to spread and appear to be gaining momentum. U.S. newspapers like the Las Vegas Review-Journal, Investor's Business Daily, and the Journal of Commerce have run stories about killer organic food. The story has also made its way to Canada and Europe, under headlines such as, "Organic just means it's dirtier, more expensive," "Organic food--'It's eight times more likely to kill you'" and "Organic food link to E. coli deaths." Even E. coli expert Rob Elder said he wouldn't eat organic food or feed it to his family because it was more pathogenic. When I asked where he got that information, he sent me a copy of an Avery piece, "Organic food? No thanks!" that appeared in the Wall Street Journal last December. Upon further questioning, Elder said a colleague had given it to him and said that Avery worked for the CDC, so he thought it was a credible source. I asked Sally Heinemann, the editorial director of Bridge News, if its syndicated columnists had to meet any particular criteria and whether Bridge checked the accuracy of Avery's columns. Instead of answering, she began shouting, "Who are you? Who do you represent? What do you really want to know? Go find it on the web!" before slamming the phone down. Avery says he can pretty much say what he likes, because he works for himself as an economic forecaster to farming organizations and doesn't have to worry about anybody firing him. Referring to his past employment with the US State Department and USDA, he adds: "I have full federal retirement, and I already own the prettiest small farm in America." He considers the $35,000 a year he gets from the Hudson Institute to be very little, and says he only needs money "to carry on the mission." Avery acknowledges that Hudson is corporate-funded. Looking over the roster of companies that have supported its work--agrichemical heavyweights like Monsanto, Du Pont, DowElanco, Sandoz and Ciba-Geigy and agribusiness giants ConAgra, Cargill, Procter & Gamble, among many others--Avery likely has no reason to fear the axe. His mission is their mission.

### A2 Avery

#### Avery’s a biased liar

Funes and Altieri 09 **–** \*Cuban Association of Agricultural and Forestry Technicians AND \*\*Profesor of Agroecology at the University of California, Berkeley and President of the Latin American Scientific Society of Agroecology(Fernando and Miguel, “The Avery Diet: The Hudson Institute’s Misinformation Campaign Against Cuban Agriculture” May, <http://globalalternatives.org/files/AveryCubaDiet.pdf>)

An article written by Dennis Avery, "Cubans Starve on Diet of Lies," was reproduced around the internet in April of this year. 1 Avery is the director of the Center for Global Food Issues at the Hudson Institute, a notorious Right-wing think tank. The financial backers of the Hudson Institute include major agribusiness(e.g. Archer Daniels Midland, ConAgra, Cargill), biotech and pesticide manufacturers(e.g. American Cyanamid, Ciba Geigy, Monsanto, Syngenta). Avery is a veteran of the State Department and the U.S.D.A. He is a well-known pro-industry pundit, and is an outspoken supporter of genetically-engineered crops, pesticides, food irradiation, industrial farming, and free trade, as well as a long-time critic of organic farming. He famously authored the book Saving the Planet With Pesticides and Plastic: The Environmental Triumph of High-Yield Farming (2000). His article begins with the following phrases: "The Cubans told the world they had heroically learned to feed themselves without fuel or farm chemicals after their Soviet subsidies collapsed in the early 1990s. They bragged about their “peasant cooperatives,” their biopesticides and organic fertilizers. They heralded their earthworm culture and the predator wasps they unleashed on destructive caterpillars. They boasted about the heroic ox teams they had trained to replace tractors. Organic activists all over the world swooned. Now, a senior Ministry of Agriculture official has admitted in the Cuban press that 84 percent of Cuba’s current food consumption isimported, according to our agricultural attaché in Havana. The organic success was all a lie—a great, gaudy, Communist-style Big Lie of the type that dictators behind the Iron Curtain routinely used throughout the Cold War to hornswoggle the Free World." Despite the notably bombastic and un-scientific language, his claims deserve examination and rebuttal. He does not cite a source for the 84% figure. Nevertheless, it has been widely reported in the media that Megalys Calvo, Vice Minister of the Economy and Planning Ministry,said in February of 2007 that 84% of items "in the basic food basket" at that time were imported. 2 However, we believe these percentages represent only the food that is distributed through regulated government channels by means of a ration card. Overall data show that Cuba’s food import dependency has been dropping for decades, despite brief upturns due to natural and human-made disasters. The best time series available on Cuban food import dependency is summarized in the following graph: (graph omitted by dheidt) One can see that Cuba's food import dependence actually declined between 1980 and 1997, aside from a spike in the early 1990s, when trade relations with the former Socialist Bloc collapsed.

## Oil/Warming

### Oil Shortages + Warming

#### The global model of industrial agriculture has massive over-reliance on fossil fuels – this causes warming and oil shortages, and means peak oil guarantees total collapse within 40 years

Only read blue if you’re also reading warming

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

Recently, there has been much speculation about the causes of higher oil prices, and continuing dis- cussion about the likelihood of whether or not prices will continue to rise. Commentary has focused on the war in Iraq and accompanying geopolitical instability in the Middle East; increasing dependence on Russia; governments in Latin American nationalizing their oil industries; and supply chain bottle necks such as refining capacity. However, the geological constraints on future energy supply, known as peak oil—the point at which oil production stops rising and begins an inevitable long-term decline—have received much less atten- tion. As noted in Fuelling A Food Crisis: The Impact of Peak Oil on Food Security: While the majority of constraints on access to oil could potentially be overcome through political or economic means, the geological reality of ever dwindling fossil-fuel supplies is non-negotiable. While it has taken 145 years to consume half of the 2-2.5 trillion barrels of conventional oil sup- plies generally regarded as the total available, it is likely that, given the huge increases of demand from China and India in particular, the other half will be largely consumed within the next 40 years. Some 98 percent of global crude oil comes from 45 nations, over half of which may already have peaked in oil production, including seven of the 11 OPEC nations. Major oil field discoveries fell to zero for the first time in 2003, while the excess capacity held by OPEC nations has dwindled, from an average of 30 percent to about 1 percent of global demand today. World oil and gas production is declining at an average of 4-6 percent a year, while demand is growing at 2-3 percent a year.2 Ironically, the present system of industrial agriculture is a major contributor to these problems. Agriculture is responsible for an estimated one-third of emissions that contribute to global warming and climate change. It is generally agreed that about 25 percent of the main greenhouse gas—carbon dioxide—is produced by agricultural pesticides and chemicals, and via deforestation and the burning of bio- mass. Most of the methane in the atmosphere comes from domestic ruminants, forest fires, wetland rice cultivation and waste products, while conventional tillage and fertilizer use account for 70 percent of the nitrous oxides.3 This set of conditions is rapidly destroying our shared heritage called the “commons”—that is, the planet’s natural resources necessary to grow food. And, although the revenge of nature itself may eventually force the end of the current global industrial agriculture model, the cost will most certainly be the destruction of millions of livelihoods and lives, scarce food supplies, and devastation to the planet’s natural systems. Given the potential for such catastrophe, it is critical to quickly restore and enhance food and fiber systems that are more regionally based, and that respect societies, cultures, and nature. GROWING FOOD ONCE EXPRESSED a “personal” relationship between human beings, wildlife and the earth. Successful farming was based on generations of accumulated knowledge about place: climate, land, water, soil and the organisms within it; mixing and rotating crops, seed saving, breeding, and recy- cling organic matter. Growing food was an intimate process; it involved farmer, land, and community, with the goal of sustaining that life-giving exchange in perpetuity. At the heart of the matter: a deep love of the land. Over the past several centuries, most food has primarily been grown locally for local community and family consumption. Until very recently, developing countries grew 90 percent of the food they con- sumed domestically and for small local markets.1 Over the centuries, local farmers developed seeds and used them collectively as a community to re-plant for the next harvest. They invented a variety of cultiva- tion methods, crops, and pest management systems that were unique to local ecosystems and cultures. Communities freely shared all local “commons”—water, labor, seeds, traditional knowledge and innova- tion—that were vital to food cultivation and the survival of stable communities. Natural resources were carefully nurtured to maintain an important balance between regional fish, fowl, and other wild creatures, and the needs of the community. As one United Nations Environment Program (UNEP) report observed: “In India, peasants grow over forty different crops on localities that have been cultivated for more than two thousand years without a drop in yields, yet have remained free of pests.”2 The report also attested to the benefits of agro-ecologi- cal approaches over millennia, citing practices of indigenous populations that are “based on ecological knowledge and understanding” and are “highly efficient and productive and inherently sustainable.” Cultures have successfully adapted to difficult environments with innovative techniques for irrigation, drainage, soil fertility, frost control, and disease management. In Central America, for example, ingenious raised-bed systems known variously as chiampas, waru waru, or tablones have withstood truly terrible geo- logical conditions and have successfully fed populations without ecological damage. Similarly, highly evolved, locally appropriate systems are found in Africa, the Andes region, South Asia, and many other places. All of these successful adaptations resulted from farmers’ intimate relations with the land, weather conditions, and unique local conditions. In this way, people fed themselves for millennia. Local, decentralized food production still provides millions of livelihoods around the world and pro- vides fresh, nutritious food direct from the land to the table without the stresses and expenses of long distance shipping. India’s wheat economy is a good example of this. Millions of Indian farmers grow over 6 billion tons of wheat per year. Leading food rights advocate Dr. Vandana Shiva explains the process in the IFG book Views From the South: A chain of traders (artis), bring wheat directly from the farm to the local shops. Most people buy fresh wheat from the local corner store (kirana) and then take it to the local mill operators (chakki wallas). It is estimated that over 2 million small neighborhood mills produce fresh flour. Additionally, flour is produced by women working in households. Shiva observes: “Less than 1 percent of flour carries a brand name because Indian consumers trust their own supervision of quality at the local mill better than a brand name attached to stale, packaged flour.” Small-scale, local food economies have successfully sustained millions of people for many centuries with little capital investment and infrastructure. Rather than technology and investment capital, people and natural resources (“natural capital”) are at the center of this system. Additionally, these centuries-old knowledge systems begat amazing food diversity. Traditional cultures enjoyed beautiful varieties of rice, potatoes, beans, corn, and other foods. Indeed, cultures were created and defined by the diversity of their foods. Annual festivals and seasonal celebrations of planting and harvesting helped ensure that the culture was imbued with nature-based practices over the centuries. radical shift to corporate control During the last century, a radical new approach to agriculture emerged. Instead of local farmers growing food locally for their own communities, a new highly centralized, global system of industrialized agricul- ture rapidly began replacing the local, decentralized small-scale food systems connected to traditional cul- tures, climates, geography, ecosystems, and other endemic factors. This model now represents the dominant paradigm for industrial, northern countries. Beginning with the Green Revolution, many developing countries began to adopt industrial agriculture practices as well. This industrial regime of the last few decades is characterized by excessive focus on the import and export of food, and is promoted and enforced by international institutions and agreements such as the World Bank, the International Monetary Fund (IMF), the World Trade Organization (WTO) and other regional and bilateral trade and investment agreements. Unlike the agreements of other international bureaucracies, such as those of the United Nations, the WTO’s agreements are legally binding and have strong enforcement capability. Thus, they have become the most important vehicles for implementing economic and also social policies across the world. Though the rules and policies of recent global agreements and institutions are negotiated between governments, they are largely crafted by large agribusiness corporations—the primary beneficiaries. A salient feature of these agreements is that food is treated as a commodity rather than as crucial for the survival of all humans. Given that food is a basic necessity of life, unlike other commodities such as tires or computers, many governments and civil society movements believe that such policies are griev- ously misguided. As Lori Wallach of Public Citizen puts it, “Food—like water—is not an optional prod- uct that consumers may choose to purchase: food is the basis of life. People without food die, while people without cars or tires walk and people without tin ore use local materials.”3 As such, many believe that governments have an obligation to ensure food as a basic human right. The result of this shift has been a loss of livelihoods for millions of farmers, and the depression of rural communities; an increase in hunger in many parts of the globe; compromised nutrition and safety of food; increased environmental destruction; and the control of food production and distribution by an ever-smaller number of giant global agribusinesses. (See Box 1.) These are some of the outcomes of this shift: ❖ Local self-reliant food systems that had provided food and livelihoods for millions, and a secure food supply, are rapidly being replaced by corporate control—often foreign corporations—over farm inputs, energy, crop commodity prices, food production, and marketing. These corporations value profits and export trade over the needs of local communities for food and sustainable products. ❖ Industrial agriculture eliminates diverse food production for local needs, replacing it with large scale monocultural production of one or two crops appropriate for export markets; thus, diminishing natural biodiversity—of micro organisms, plants, insects, and animals, and diminishing local food supply as well. ❖ Heavy use of industrial agricultural processes, including pesticides, chemical fertilizers and fossil fuel-based machinery are rapidly destroying the vitality of the soil, polluting and over-using scarce fresh water, polluting the air, and harming wildlife and humans. ❖ The corporate introduction of genetically modified organisms (GMOs) and plants further destroys biodiversity and brings unknown, potentially catastrophic dangers via new forms of biopollution. ❖ The export driven model of globalized agriculture requires a huge increase in transport infrastruc- tures —roads, ports, airports, energy grids—often constructed at the expense of nature and in defiance of global energy shortages. ❖ Massive shipments of agricultural commodities across great distances requires additional fossil fuel usage, refrigeration, packaging, etc. and fosters mobility of exotic plant and animal species, and the spread of pests, viruses, bacteria, and disease. ❖ Control over and accesstothe mostessential elements of life—thecommons—arebeingstrippedaway from local communities and given over to corporations (often via World Bank privatization schemes). ❖ Traditional knowledge of seeds, plants, and cultivation are being expropriated for profit, and patented by large corporations—a process known as “biopiracy.” ❖ Agriculture accounts for approximately 25 percent of carbon dioxide emissions; and 70 percent of nitrous oxide emissions.4 global macro effects The expansion of the industrial agriculture model affects everyone, whether they live in cities, suburban America, or the countryside in the global South or North. To illustrate, we offer examples below on how globalized industrial agriculture relates to two of the most pressing issues of our time: immigration and global warming. –9– part one The Roots of Migration The issue of immigration has dozens of countries in serious turmoil. The U.S. is no exception. Here, the raging debate about immigration is largely the result of globalized industrial agriculture, and trade agree- ments that embrace this model. Between 1990 and 2005, the number of migrants from Mexico and Central America living in the U.S. without authorization spiked from 2 million to an estimated 6.2 million. Many of these migrants could be called “NAFTA refugees.” The North American Free Trade Agreement (NAFTA), which went into effect in 1994, lifted barriers to “free” agricultural trade between North and South, with dire consequences. As part of the condition for joining NAFTA, Mexico was required to drastically change its Constitution and abandon the traditional ejido system of communal land and resource ownership. This is the system created after the Mexican Revolution of the early 20th century that made traditional farming in Mexico productive and viable. Mexico was also forced to dismantle a system that had provided a guaranteed floor price for corn for Mexican farmers, which had sustained over 3 million corn producers. As a result of NAFTA, Mexican farmers suddenly found themselves competing with an influx of cheap agricultural commodities produced by large-scale, heavily subsidized U.S. producers. Corn imports from the North grew 17-fold between 1993 and 2001 and accounted for 25 percent of Mexican corn consumption. This compared to a pre-NAFTA figure of 2 percent.5 Within a year of NAFTA’s passage, Mexican production of corn and other basic grains fell by 50 percent, and millions of peasant farmers lost a significant source of their incomes.6 Facing dire poverty in the Mexican countryside, millions of farmers migrated off their lands and made the wrenching decision to leave behind families and communities and head northward. Once in the United States, these migrants often found jobs in the fields, performing backbreaking work for poor pay and with- out basic rights. Thousands of others toil in industrial food processing plants, where conditions today resemble those depicted in The Jungle by Upton Sinclair at the end of the 19th century. Despite NAFTA’s record, the U.S. Congress approved a similar agreement with Central America in 2005 that is expected to have similar devastating effects on small farmers in those countries. Many of them will also likely attempt to seek economic opportunities in the United States. Similar stories could be told throughout the developing world; farmers everywhere are vulnerable to import competition, not only because of free trade agreements but also due to World Bank- and IMF-promoted cuts to all types of supports for small-scale agriculture, as this report will discuss. Climate Change/Peak Oil—Fatal Threats to Globalized Agriculture Another threat from globalized industrial agriculture is the role it plays in the rapid advancement of cli- mate change on the earth. In dozens of ways, from destruction of carbon-absorbing forests, to the massive over-use of fossil fuels for production and for transportation (upon which the entire model depends), climate change is directly furthered. One-eighth of the world oil supply is now used for transportation with a very high percentage of that being used for long distance shipment of food across oceans or continents. It has been widely quoted that the average plate of food on an American dinner table today has traveled more than 1,500 miles from source to plate. According to Edward Goldsmith, Europe’s leading ecological thinker, and publisher of The Ecologist, industrial agriculture bears overall responsibility for about 25 percent of the world’s carbon dioxide emissions, 60 percent of methane gas emissions, and 70-80 percent of nitrous oxide—all of them major greenhouse gasses contributing to climate change.7 Many climate scien- tists already predict hundreds more storms on the scale of Katrina or worse, and a rise in sea levels that could inundate thousands of miles of coastal farmlands in both North and South. Ironically, there is also a reverse kind of threat to the food supply within a global industrial agricul- ture system, in that we are now approaching an unprecedented shortage of oil and natural gas on the Earth, called “peak oil” by many scientists and even corporations and governments. When that shortage fully kicks-in—and some say it is doing so now—the entire global industrial agriculture system could be threatened with collapse, as it will not be able to maintain long distance shipping in the face of increasingly high energy costs. This could play havoc with food delivery globally and itself bring on a reversal of current trends. Here’s a brief review of some of the climate related impacts from industrial agriculture: In the last few decades, climate-stabilizing tropical rainforests have been cut down at an alarming rate, mainly for conversion to industrialized export-crop production, or for cattle grazing. Millions of tons of nitrous oxide emissions are the result. Nitrogen fertilizers, a staple of industrial agriculture, are another major source of nitrous oxide, contributing as much as 10 percent of total annual nitrous oxide emissions.8 Methane emissions are also dramatically increasing because of flood-irrigated, nitrogen-dosed rice fields and the substantial increase in industrially raised livestock—in particular, cattle. Carbon dioxide emissions are largely caused by the loss of soil carbon to the atmosphere. Modern industrial agriculture massively contributes to this by practices such as drainage of wetlands, deep plow- ing that exposes the soil to the elements, use of heavy machinery that compacts the soil, use of fertilizers and pesticides that destroy soil structure, overgrazing leading to desertification, and the practice of grow- ing monocrops on a large scale. Modern irrigation is especially energy intensive. Farmer-saved seeds that have been developed and selected over millennia to succeed in specific local climates and geological configurations have longer roots that can dig deep into the soil to find sources of moisture that the short-rooted industrial commercial high yielding seeds cannot utilize. For example, in industrial corn production, it is sometimes neces- sary to pump out water from a depth of more than thirty meters. Such pumped irrigation requires more than three times as much fossil fuel energy as rain-fed corn cultivation. Commercial high yielding hybrid seed varieties, and genetically modified seeds, require much more water than traditional crops, just as they require more chemicals than non-commercial seeds. This increases dependence on perennially irrigated crops at a time when the planet’s fresh water supply is diminishing. Most modern industrial agriculture production is for export markets—this translates into massive increases in the use of increasingly scarce fossil fuels for transport, and increased production and disposal, packaging, and long distance refrigeration. All of this, however, could be undermined by the realities of “peak oil” which could spell the beginning of the end of the dominance of the industrial agriculture model. This possibility, combined with the model’s more apparent failures, makes it even more crucial that alternatives to the industrial agriculture model be studied and implemented. This will be discussed later in Part Three.

#### Oil shortages cause extinction

Lendman 7 [(Steven, Research Associate of the Centre for Research on Globalization. “Resource Wars - Can We Survive Them?,” Rense.com, 6-6-7, pg. http://www.rense.com/general76/resrouce.htm]

With the world's energy supplies finite, the US heavily dependent on imports, and "peak oil" near or approaching, "security" for America means assuring a sustainable supply of what we can't do without. It includes waging wars to get it, protect it, and defend the maritime trade routes over which it travels. That means energy's partnered with predatory New World Order globalization, militarism, wars, ecological recklessness, and now an extremist US administration willing to risk Armageddon for world dominance. Central to its plan is first controlling essential resources everywhere, at any cost, starting with oil and where most of it is located in the Middle East and Central Asia. The New "Great Game" and Perils From It The new "Great Game's" begun, but this time the stakes are greater than ever as explained above. The old one lasted nearly 100 years pitting the British empire against Tsarist Russia when the issue wasn't oil. This time, it's the US with help from Israel, Britain, the West, and satellite states like Japan, South Korea and Taiwan challenging Russia and China with today's weapons and technology on both sides making earlier ones look like toys. At stake is more than oil. It's planet earth with survival of all life on it twice over. Resources and wars for them means militarism is increasing, peace declining, and the planet's ability to sustain life front and center, if anyone's paying attention. They'd better be because beyond the point of no return, there's no second chance the way Einstein explained after the atom was split. His famous quote on future wars was : "I know not with what weapons World War III will be fought, but World War IV will be fought with sticks and stones." Under a worst case scenario, it's more dire than that. There may be nothing left but resilient beetles and bacteria in the wake of a nuclear holocaust meaning even a new stone age is way in the future, if at all. The threat is real and once nearly happened during the Cuban Missile Crisis in October, 1962. We later learned a miracle saved us at the 40th anniversary October, 2002 summit meeting in Havana attended by the US and Russia along with host country Cuba. For the first time, we were told how close we came to nuclear Armageddon. Devastation was avoided only because Soviet submarine captain Vasily Arkhipov countermanded his order to fire nuclear-tipped torpedos when Russian submarines were attacked by US destroyers near Kennedy's "quarantine" line. Had he done it, only our imagination can speculate what might have followed and whether planet earth, or at least a big part of it, would have survived.

### Impact Calc

#### Our oil scenario outweighs other impacts

#### time frame – collapse could occur in years

Ahmed 12/23 [Nafeez, That Badass Security Author, Executive Director of the Institute for Policy Research & Development, Former Professor of International Relations at the University of Sussex, 2013, “Former BP Geologist: Peak Oil is Here and it Will ‘Break Economies’” http://www.theguardian.com/environment/earth-insight/2013/dec/23/british-petroleum-geologist-peak-oil-break-economy-recession]

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Most of these giant fields are relatively old, many are well past their peak of production, most of the rest seem likely to enter decline within the next decade or so and few new giant fields are expected to be found." "The final peak is going to be decided by the price - how much can we afford to pay?", Dr. Miller told me in an interview about his work. "If we can afford to pay $150 per barrel, we could certainly produce more given a few years of lead time for new developments, but it would break economies again." Miller argues that for all intents and purposes, peak oil has arrived as conditions are such that despite volatility, prices can never return to pre-2004 levels: "The oil price has risen almost continuously since 2004 to date, starting at $30. There was a great spike to $150 and then a collapse in 2008/2009, but it has since climbed to $110 and held there. The price rise brought a lot of new exploration and development, but these new fields have not actually increased production by very much, due to the decline of older fields. This is compatible with the idea that we are pretty much at peak today. This recession is what peak feels like." Although he is dismissive of shale oil and gas' capacity to prevent a peak and subsequent long decline in global oil production, Miller recognises that there is still some leeway that could bring significant, if temporary dividends for US economic growth - though only as "a relatively short-lived phenomenon": "We're like a cage of lab rats that have eaten all the cornflakes and discovered that you can eat the cardboard packets too. Yes, we can, but... Tight oil may reach 5 or even 6 million b/d in the US, which will hugely help the US economy, along with shale gas. 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#### Structural certainty – all the evidence confirms a strong trend that ends in total collapse – prefer impacts that are happening now because it means extinction is inevitable in the status quo so the plan is the best option even if poses possible risks – try or die for the aff

#### 3. Probability – Oil wars are empirically real

### YES PEAK OIL

### Prefer Barker

#### Prefer the Barker evidence

#### It accounts for new oil field discoveries – continued oil production relies on continuously finding new fields but there haven’t been any – even if there are some new fields, it’s not enough to offset the overall reduction in new discoveries

#### It accounts for rising demand – even if other sources can increase production, it will never be enough to meet the rapid increases in demand from China and India

### Yes Peak Oil---General Card

**Peak oil is real and causes conflict – new discoveries are irrelevant since prices would be too high, reserves insufficient, and production is insufficient – this is confirmed by consensus**

**Ahmed** **12/23** [Nafeez, That Badass Security Author, Executive Director of the Institute for Policy Research & Development, Former Professor of International Relations at the University of Sussex, 2013, “Former BP Geologist: Peak Oil is Here and it Will ‘Break Economies’” http://www.theguardian.com/environment/earth-insight/2013/dec/23/british-petroleum-geologist-peak-oil-break-economy-recession]

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### ---Prefer Ahmed [:30]

#### The Ahmed evidence wrecks their evidence

#### Represents a litany of evidence from multiple sources and global institutions – this corrects any possible bias and means their evidence represents fringe sources that are likely flawed. Consensus outweighs other reasons to prefer since the people in the field are more informed and have more time to compare the evidence than debaters do so any evidence comparison we do has already been accounted for by consensus

#### Recency – this is from a few weeks ago so it accounts for the newest data and production trends

### Peak Oil Real [Short]

#### Peak oil is real.

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Growth in liquid supply since then has been largely of natural gas liquids [NGL]- ethane, propane, butane, pentane - and oil-sand bitumen." Dr. Miller is co-editor of a special edition of the prestigious journal, Philosophical Transactions of the Royal Society A, published this month on the future of oil supply. In an introductory paper co-authored with Dr. Steve R. Sorrel, co-director of the Sussex Energy Group at the University of Sussex in Brighton, they argue that among oil industry experts "there is a growing consensus that the era of cheap oil has passed and that we are entering a new and very different phase." They endorse the conservative conclusions of an extensive earlier study by the government-funded UK Energy Research Centre (UKERC): "... a sustained decline in global conventional production appears probable before 2030 and there is significant risk of this beginning before 2020... on current evidence the inclusion of tight oil [shale oil] resources appears unlikely to significantly affect this conclusion, partly because the resource base appears relatively modest." In fact, increasing dependence on shale could worsen decline rates in the long run: "Greater reliance upon tight oil resources produced using hydraulic fracturing will exacerbate any rising trend in global average decline rates, since these wells have no plateau and decline extremely fast - for example, by 90% or more in the first 5 years." Tar sands will fare similarly, they conclude, noting that "the Canadian oil sands will deliver only 5 mb per day by 2030, which represents less than 6% of the IEA projection of all-liquids production by that date." Despite the cautious projection of global peak oil "before 2020", they also point out that: "Crude oil production grew at approximately 1.5% per year between 1995 and 2005, but then plateaued with more recent increases in liquids supply largely deriving from NGLs, oil sands and tight oil. These trends are expected to continue... Crude oil production is heavily concentrated in a small number of countries and a small number of giant fields, with approximately 100 fields producing one half of global supply, 25 producing one quarter and a single field (Ghawar in Saudi Arabia) producing approximately 7%. Most of these giant fields are relatively old, many are well past their peak of production, most of the rest seem likely to enter decline within the next decade or so and few new giant fields are expected to be found." "The final peak is going to be decided by the price - how much can we afford to pay?", Dr. Miller told me in an interview about his work. "If we can afford to pay $150 per barrel, we could certainly produce more given a few years of lead time for new developments, but it would break economies again." Miller argues that for all intents and purposes, peak oil has arrived as conditions are such that despite volatility, prices can never return to pre-2004 levels: "The oil price has risen almost continuously since 2004 to date, starting at $30. There was a great spike to $150 and then a collapse in 2008/2009, but it has since climbed to $110 and held there. The price rise brought a lot of new exploration and development, but these new fields have not actually increased production by very much, due to the decline of older fields. This is compatible with the idea that we are pretty much at peak today. This recession is what peak feels like." Although he is dismissive of shale oil and gas' capacity to prevent a peak and subsequent long decline in global oil production, Miller recognises that there is still some leeway that could bring significant, if temporary dividends for US economic growth - though only as "a relatively short-lived phenomenon": "We're like a cage of lab rats that have eaten all the cornflakes and discovered that you can eat the cardboard packets too. Yes, we can, but... Tight oil may reach 5 or even 6 million b/d in the US, which will hugely help the US economy, along with shale gas. Shale resources, though, are inappropriate for more densely populated countries like the UK, because the industrialisation of the countryside affects far more people (with far less access to alternative natural space), and the economic benefits are spread more thinly across more people. Tight oil production in the US is likely to peak before 2020. There absolutely will not be enough tight oil production to replace the US' current 9 million b/d of imports." In turn, by prolonging global economic recession, high oil prices may reduce demand. Peak demand in turn may maintain a longer undulating oil production plateau: "We are probably in peak oil today, or at least in the foot-hills. Production could rise a little for a few years yet, but not sufficiently to bring the price down; alternatively, continuous recession in much of the world may keep demand essentially flat for years at the $110/bbl price we have today. But we can't grow the supply at average past rates of about 1.5% per year at today's prices." The fundamental dependence of global economic growth on cheap oil supplies suggests that as we continue into the age of expensive oil and gas, without appropriate efforts to mitigate the impacts and transition to a new energy system, the world faces a future of economic and geopolitical turbulence: "In the US, high oil prices correlate with recessions, although not all recessions correlate with high oil prices. It does not prove causation, but it is highly likely that when the US pays more than 4% of its GDP for oil, or more than 10% of GDP for primary energy, the economy declines as money is sucked into buying fuel instead of other goods and services... A shortage of oil will affect everything in the economy. I expect more famine, more drought, more resource wars and a steady inflation in the energy cost of all commodities." According to another study in the Royal Society journal special edition by professor David J. Murphy of Northern Illinois University, an expert in the role of energy in economic growth, the energy return on investment (EROI) for global oil and gas production - the amount of energy produced compared to the amount of energy invested to get, deliver and use that energy - is roughly 15 and declining. For the US, EROI of oil and gas production is 11 and declining; and for unconventional oil and biofuels is largely less than 10. The problem is that as EROI decreases, energy prices increase. Thus, Murphy concludes: "... the minimum oil price needed to increase the oil supply in the near term is at levels consistent with levels that have induced past economic recessions. From these points, I conclude that, as the EROI of the average barrel of oil declines, long-term economic growth will become harder to achieve and come at an increasingly higher financial, energetic and environmental cost." Current EROI in the US, Miller said, is simply "not enough to support the US infrastructure, even if America was self-sufficient, without raising production even further than current consumption." In their introduction to their collection of papers in the Royal Society journal, Miller and Sorrell point out that "most authors" in the special edition "accept that conventional oil resources are at an advanced stage of depletion and that liquid fuels will become more expensive and increasingly scarce." The shale revolution can provide only "short-term relief", but is otherwise "unlikely to make a significant difference in the longer term." They call for a "coordinated response" to this challenge to mitigate the impact, including "far-reaching changes in global transport systems." While "climate-friendly solutions to 'peak oil' are available" they caution, these will be neither "easy" nor "quick", and imply a model of economic development that accepts lower levels of consumption and mobility.

### A2 Shale Revolution

#### [Ahmed application] Ahmed specifically answers the shale revolution –

#### shale might be increasing now, but the evidence proves it’s too little, too late and it will not affect long-term production declines

#### it’s also not economical since it will soon be unaffordable – it has too many costs and not enough benefits to keep extracting it

#### Empirics – net total production is declining – even if shale revolution occurs, it won’t be enough to offset the overall trend of declining production

### A2 New Discoveries/Lots of Reserves

#### [Ahmed] 4 reasons Ahmed answers and outweighs their evidence about new discoveries

#### It accounts for new discoveries – steady production relies on constantly finding new reserves, so a few new discoveries can’t offset the overall decline in available oil

#### It proves any new discoveries provide only short-term relief since they decline extremely fast and only increase oil instability

#### This is completely besides the point – the issue is limits on production, not limited reserves – oil still exists but the costs required to extract it are so high they’d break economies, which makes it functionally gone

#### Production is empirically declining, which confirms that peak oil is already here – even if there is more oil, no one is willing to produce it – no new discoveries or production increases are actually happening even if they’re possible which empirically denies their evidence

### A2 Tech Solves

#### [Ahmed] New tech is more costly which requires high prices to make it worthwhile – Ahmed disproves that since the oil prices required to sustain investments in tech destroy economies which makes them unviable

#### High costs, political risk, and decreasing demand mean the market can’t sustain the prices needed to pay for tech costs

Klare 1/11 [(Michael, Five Colleges professor of Peace and World Security Studies, natural resource expert, serves on the board of the Arms Control Association) “Think “peak oil” is a discredited idea? Think again” Grist 1/11/14] AT

In place of peak oil, then, we have a new theory that as yet has no name but might be called techno-dynamism. There is, this theory holds, no physical limit to the global supply of oil so long as the energy industry is prepared to, and allowed to, apply its technological wizardry to the task of finding and producing more of it. Daniel Yergin, author of the industry classics, The Prize and The Quest, is a key proponent of this theory. He recently summed up the situation this way: “Advances in technology take resources that were not physically accessible and turn them into recoverable reserves.” As a result, he added, “estimates of the total global stock of oil keep growing.” From this perspective, the world supply of petroleum is essentially boundless. In addition to “conventional” oil — the sort that comes gushing out of the ground — the IEA identifies six other potential streams of petroleum liquids: natural gas liquids; tar-sands and extra-heavy oil; kerogen oil (petroleum solids derived from shale that must be melted to become usable); shale oil; coal-to-liquids (CTL); and gas-to-liquids (GTL). Together, these “unconventional” streams could theoretically add several trillion barrels of potentially recoverable petroleum to the global supply, conceivably extending the Oil Age hundreds of years into the future (and in the process, via climate change, turning the planet into an uninhabitable desert). But just as peak oil had serious limitations, so, too, does techno-dynamism. At its core is a belief that rising world oil demand will continue to drive the increasingly costly investments in new technologies required to exploit the remaining hard-to-get petroleum resources. As suggested in the 2013 edition of the IEA’s World Energy Outlook, however, this belief should be treated with considerable skepticism. Among the principal challenges to the theory are these: 1. Increasing technology costs: While the costs of developing a resource normally decline over time as industry gains experience with the technologies involved, Hubbert’s law of depletion doesn’t go away. In other words, oil firms invariably develop the easiest “tough oil” resources first, leaving the toughest (and most costly) for later. For example, the exploitation of Canada’s tar sands began with the strip-mining of deposits close to the surface. Because those are becoming exhausted, however, energy firms are now going after deep-underground reserves using far costlier technologies. Likewise, many of the most abundant shale oil deposits in North Dakota have now been depleted, requiring an increasing pace of drilling to maintain production levels. As a result, the IEA reports, the cost of developing new petroleum resources will continually increase: up to $80 per barrel for oil obtained using advanced EOR techniques, $90 per barrel for tar-sands and extra-heavy oil, $100 or more for kerogen and Arctic oil, and $110 for CTL and GTL. The market may not, however, be able to sustain levels this high, putting such investments in doubt. 2. Growing political and environmental risk: By definition, tough oil reserves are located in problematic areas. For example, an estimated 13 percent of the world’s undiscovered oil lies in the Arctic, along with 30 percent of its untapped natural gas. The environmental risks associated with their exploitation under the worst of weather conditions imaginable will quickly become more evident — and so, faced with the rising potential for catastrophic spills in a melting Arctic, expect a commensurate increase in political opposition to such drilling. In fact, a recent increase has sparked protests in both Alaska and Russia, including the much-publicized September 2013 attempt by activists from Greenpeace to scale a Russian offshore oil platform — an action that led to their seizure and arrest by Russian commandos. Similarly, expanded fracking operations have provoked a steady increase in anti-fracking activism. In response to such protests and other factors, oil firms are being forced to adopt increasingly stringent environmental protections, pumping up the cost of production further. 3. Climate-related demand reduction: The techno-optimist outlook assumes that oil demand will keep rising, prompting investors to provide the added funds needed to develop the technologies required. However, as the effects of rampant climate change accelerate, more and more policies are likely to try to impose curbs of one sort or another on oil consumption, suppressing demand — and so discouraging investment. This is already happening in the United States, where mandated increases in vehicle fuel-efficiency standards are expected to significantly reduce oil consumption. Future “demand destruction” of this sort is bound to impose a downward pressure on oil prices, diminishing the inclination of investors to finance costly new development projects. Combine these three factors, and it is possible to conceive of a “technology peak” not unlike the peak in oil output originally envisioned by M. King Hubbert. Such a techno-peak is likely to occur when the “easy” sources of “tough” oil have been depleted, opponents of fracking and other objectionable forms of production have imposed strict (and costly) environmental regulations on drilling operations, and global demand has dropped below a level sufficient to justify investment in costly extractive operations. At that point, global oil production will decline even if supplies are “boundless” and technology is still capable of unlocking more oil every year.

### YES OIL WARS

### US Intervention

#### Oil volatility sparks great power war – forces U.S. intervention and goes nuclear

King 08 (Neil, Peak Oil: A Survey of Security Concerns, Center for a New American Security, p. 14-17)

Many commentators in the United States and abroad have begun to wrestle with the question of whether soaring oil prices and market volatility could spark an outright oil war between major powers—possibly ignited not by China or Russia, but by the United States. In a particularly pointed speech on the topic in May, James Russell of the Naval Postgraduate School in California addressed what he called the increasing militarization of international energy security. “Energy security is now deemed so central to ‘national security’ that threats to the former are liable to be reflexively interpreted as threats to the latter,” he told a gathering at the James A. Baker Institute for Public Policy at Houston’s Rice University.6 The possibility that a large-scale war could break out over access to dwindling energy resources, he wrote, “is one of the most alarming prospects facing the current world system.”7 Mr. Russell figures among a growing pool of analysts who worry in particular about the psychological readiness of the United States to deal rationally with a sustained oil shock. Particularly troubling is the increasing perception within Congress that the financial side of the oil markets no longer functions rationally. It has either been taken over by speculators or is being manipulated, on the supply side, by producers who are holding back on pumping more oil in order to drive up the price. A breakdown in trust for the oil markets, these analysts fear, could spur calls for government action—even military intervention. “The perceptive chasm in the United States between new [oil] market realities and their impact on the global distribution of power will one day close,” Mr. Russell said. “And when it does, look out.”8 The World at Peak: Taking the Dim View For years, skeptics scoffed at predictions that the United States would hit its own domestic oil production peak by sometime in the late 1960s. With its oil fields pumping full out, the U.S. in 1969 was providing an astonishing 25 percent of the world’s oil supply—a role no other country has ever come close to matching. U.S. production then peaked in December 1970, and has fallen steadily ever since, a shift that has dramatically altered America’s own sense of vulnerability and reordered its military priorities. During World War II, when its allies found their own oil supplies cut off by the war, the United States stepped in and made up the difference. Today it is able to meet less than a third of its own needs. A similar peak in worldwide production would have far more sweeping consequences. It would, for one, spell the end of the world’s unparalleled economic boom over the last century. It would also dramatically reorder the wobbly balance of power between nations as energy-challenged industrialized countries turn their sights on the oil-rich nations of the Middle East and Africa. In a peak oil future, the small, flattened, globalized world that has awed recent commentators would become decidedly round and very vast again. Oceans will reemerge as a hindrance to trade, instead of the conduit they have been for so long. An energy-born jolt to the world economy would leave no corner of the globe untouched. Unable to pay their own fuel bills, the tiny Marshall Islands this summer faced the possibility of going entirely without power. That is a reality that could sweep across many of the smallest and poorest countries in Africa, Asia, and Latin America, reversing many of the tentative gains in those regions and stirring deep social unrest. Large patches of the world rely almost entirely on diesel-powered generators for what skimpy electricity they now have. Those generators are the first to run empty as prices soar. A British parliamentary report released in June on “The Impact of Peak Oil on International Development” concluded that “the deepening energy crisis has the potential to make poverty a permanent state for a growing number of people, undoing the development efforts of a generation.”9 We are seeing some of the consequences already in Pakistan – a country of huge strategic importance, with its own stash of nuclear weapons – that is now in the grips of a severe energy crisis. By crippling the country’s economy, battering the stock market, and spurring mass protests, Pakistan’s power shortages could end up giving the country’s Islamic parties the leverage they have long needed to take power. It’s not hard to imagine similar scenarios playing out in dozens of other developing countries. Deepening economic unrest will put an enormous strain on the United Nations and other international aid agencies. Anyone who has ever visited a major UN relief hub knows that their fleets of Land Rovers, jumbo jets and prop planes have a military size thirst for fuel. Aid agency budgets will come under unprecedented pressure just as the need for international aid skyrockets and donor countries themselves feel pressed for cash. A peaking of oil supplies could also hasten the impact of global climate change by dramatically driving up the use of coal for power generation in much of the world. A weakened world economy would also put in jeopardy the massively expensive projects, such as carbon capture and storage, that many experts look to for a reduction in industrial emissions. So on top of the strains caused by scarce fossil fuels, the world may also have to grapple with the destabilizing effects of more rapid desertification, dwindling fisheries, and strained food supplies. An oil-constricted world will also stir perilous frictions between haves and have-nots. The vast majority of all the world’s known oil reserves is now in the hands of national oil companies, largely in countries with corrupt and autocratic governments. Many of these governments—Iran and Venezuela top the list—are now seen as antagonists of the United States. Tightened oil supplies will substantially boost these countries’ political leverage, but that enhanced power will carry its own peril. Playing the oil card when nations are scrambling for every barrel will be a far more serious matter that at any time in the past. The European continent could also undergo a profound shift as its needs—and sources of energy—diverge all the more from those of the United States. A conservation-oriented Europe (oil demand is on the decline in almost every EU country) will look all the more askance at what it sees as the gluttonous habits of the United States. At the same time, Europe’s governments may have little choice but to shy from any political confrontations with its principal energy supplier, Russia. An energy-restricted future will greatly enhance Russia’s clout within settings like the UN Security Council but also in its dealings with both Europe and China. Abundant oil and gas have fueled Russia’s return to power over the last decade, giving it renewed standing within the UN and increasing sway over European capitals. The peak oil threat is already sending shivers through the big developing countries of China and India, whose propulsive growth (and own internal stability) requires massive doses of energy. For Beijing, running low on fuel spells economic chaos and internal strife, which in turn spawns images of insurrection and a breaking up of the continent sized country. Slumping oil supplies will automatically pit the two largest energy consumers—the United States and China—against one another in competition over supplies in South America, West Africa, the Middle East, and Central Asia. China is already taking this competition very seriously. It doesn’t require much of a leap to imagine a Cold War-style scramble between Washington and Beijing—not for like-minded allies this time but simply for reliable and tested suppliers of oil. One region that offers promise and peril in almost equal measure is the Artic, which many in the oil industry consider the last big basin of untapped hydrocarbon riches. But the Artic remains an ungoverned ocean whose legal status couldn’t be less clear, especially so long as the United States continues to remain outside the international Law of the Sea Treaty. As the ices there recede, the risk increases that a scramble for assets in the Artic could turn nasty.

#### The shock alone causes war

Roberts 04 (Paul, Regular Contributor to Harpers and NYT Magazine, “The End of Oil: On The Edge of a Perilous New World”, p. 93-94)

The obsessive focus on oil is hardly surprising, given the stakes. In the fast-moving world of oil politics, oil is not simply a source of world power, but a medium for that power as well, a substance whose huge importance enmeshes companies, communities, and entire nations in a taut global web that is sensitive to the smallest of vibrations. A single oil "event" — a pipeline explosion in Iraq, political unrest in Venezuela, a bellicose exchange between the Russian and Saudi oil ministers — sends shockwaves through the world energy order, pushes prices up or down, and sets off tectonic shifts in global wealth and power. Each day that the Saudi-Russian spat kept oil supplies high and prices low, the big oil exporters were losing hundreds of millions of dollars and, perhaps, moving closer to financial and political disaster — while the big consuming nations enjoyed what amounted to a massive tax break. Yet in the volatile world of oil, the tide could quickly turn. A few months later, as anxieties over a second Iraq war drove prices up to forty dollars, the oil tide abruptly changed directions, transferring tens of billions of dollars from the economies of the United States, Japan, and Europe to the national banks in Riyadh, Caracas, Kuwait City, and Baghdad, and threatening to strangle whatever was left of the global economic recovery. So embedded has oil become in today's political and economic spheres that the big industrial governments now watch the oil markets as closely as they once watched the spread of communism — and with good reason: six of the last seven global recessions have been preceded by spikes in the price of oil, and fear is growing among economists and policymakers that, in today's growth-dependent, energy-intensive global economy, oil price volatility itself may eventually pose more risk to prosperity and stability and simple survival than terrorism or even war.

### Regional Wars

#### The shock causes regional conflicts that escalate to global nuclear war

Qasem 7 [Islam Yasin Qasem, a doctoral candidate in the Department of Politics and Social Sciences at the University of Pompeu Fabra (UPF) in Barcelona, MA in International Affairs from Columbia, July 9, 2007, “The Coming Warfare of Oil Shortage,” online: http://www.opednews.com/articles/opedne\_islam\_ya\_070709\_the\_coming\_warfare\_o.htm]

Recognizing the strategic value of oil for their national interests, superpowers will not hesitate to unleash their economic and military power to ensure secure access to oil resources, triggering worldwide tension, if not armed conflict. And while superpowers like the United States maintain superior conventional military power, in addition to their nuclear power, some weaker states are already nuclearly armed, others are seeking nuclear weapons. In an anarchic world with many nuclear-weapon states feeling insecure, and a global economy in downward spiral, the chances of using nuclear weapons in pursues of national interests are high.

### Yes Escalation

#### US would escalate any oil conflict

Klare 9 (Michael, professor of peace and world security studies at Hampshire college and the author of resource wars and blood and oil. “Repudiate the Carter Doctrine” http://www.fpif.org/articles/repudiate\_the\_carter\_doctrine. January 22, 2009)

Twenty-nine years ago, president jimmy Carter adopted the radical and dangerous policy of using military force to ensure U.S. Access to Middle Eastern oil. "let our position be absolutely he clear," he said in his state of the union address on january 23, 1980. "an attempt by any outside force to gain control of the Persian Gulf region [and thereby endanger the flow of oil] will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force." this principle — known ever since as the carter doctrine — led to U.S. Involvement in three major wars and now risks further military entanglement in the greater gulf area. It's time to repudiate this doctrine and satisfy U.S. Energy needs without reliance on military intervention.

### China War

#### US oil dependence makes US-Sino war inevitable

Nur ‘11 – Amos Nur, Professor of Earth Sciences and Professor of Geophysics at Stanford (Lecture at Technion, 3/28/11, http://www1.technion.ac.il/\_local/includes/blocks/news-items/110331-nur/news-item-en.htm)

There is a risk for conflict between the U.S. and China due to oil shortages: So warns Professor Amos Nur of Stanford University’s Department of Geophysics, who gave a lecture at the Technion as part of the Nancy and Stephen Grand Technion Energy Program: “China and the U.S. compete in developing Middle East oil resources.” This issue has sparked eight wars in the last twenty years, from the Gulf War up to Libya, and according to Nur, the situation will worsen. There is a high risk of conflict between two of the biggest economic powers in the world the U.S. and China as a result of the struggle for control of oil sources, if the leaders of these two countries do not manage the crisis sensibly. So warns Professor Amos Nur of the Department of Geophysics at Stanford University and a world renowned expert in the field of oil. In a lecture he gave in the framework of the Nancy and Stephen Grand Technion Energy Program, Prof. Nur said that many wars have been sparked because of oil shortages, and just in the last twenty years there have been eight such wars. According to him, the objective of the First Gulf War had been to change the regime in Iraq the country with the second largest oil reserves in the world (Saudi Arabia is the largest), and privatize its oil sector. The September 11 attacks stemmed from Bin Laden’s disgust with the American support of the Saudi royal family, which controls the oil resources, and his demand for a more equal division of the Saudi royal family’s money. The Egyptian crisis, which has led to a change in government, is also connected to oil. The population increase, on the one hand, and the dwindling of oil wells, on the other, changed Egypt in the last few years from an oil exporter into an oil importer, which means not enough revenue from oil sales for food subsidies. As a result, the prices of food doubled and gas prices went up tens of percent, fueling the masses’ anger with Mubarak. The fact that Libya is an oil exporter to the West has also been a reason for intervening in the present crisis. The West hopes to ensure that a democracy replaces Qaddafi, so that one madman does not control all of Libya’s oil reserves. Energy in general and oil in particular are the largest economic sector in the world generating about 10 trillion dollars. Notwithstanding, oil resources are limited and the tendency is, with their discovery, to consume them rapidly. As a result, many countries are already producing as much as they can and the amounts being produced are decreasing. The U.S. reached its peak in 1971, and after its rising population curve and declining oil production curve met, the U.S. became an oil importing nation. Today the U.S. imports about two-thirds of its oil needs and in another decade this will reach 80%. China, too, became an oil importer following the huge rise in its living standard. If in the beginning, China looked for and developed oil resources in relatively remote areas such as Darfur in Sudan, today it is competing with the U.S. in everything related to influence on oil resources especially in the Middle East. Hence, for example, China opposes sanctions on Iran in order to ensure itself oil. “In the end, if the crisis is not handled prudently, it is likely to lead to a conflict between the two superpowers,” warms Prof. Nur. “Whoever thinks that this is unrealistic should remember that the U.S. and Japan were not enemies prior to World War II, but the Japanese decided to destroy the entire U.S. navy stationed in the Pacific Ocean in the Pearl Harbor attack and risk war just to guarantee itself access to Sumatra’s oil wells. Rommel also did not just race to destroy the Jews in Eretz Yisrael but to get control of the Middle East oil wells, especially those in Iraq that had already been discovered in the 1920s.”

## Warming

### Links

#### Industrial agriculture is the root cause of warming

Cummins 10(Ronnie, founder and Director of the Organic Consumers Association (OCA), a non-profit, U.S. based network of 850,000 consumers, dedicated to safeguarding organic standards and promoting a healthy, just, and sustainable system of agriculture and commerce. The OCA’s primary strategy is to work on national and global campaigns promoting health, justice, and sustainability that integrate public education, marketplace pressure, media work, litigation, and grassroots lobbying. Cummins is also editor of OCA’s website www.organicconsumers.org (30,000 visitors a day) and newsletters, Organic Bytes (270,000 subscribers), and Organic View, he has served as director of US and international efforts such as the Pure Food Campaign, and the Global Days of Action Against GMOs. From 1992-98 Cummins served as a campaign director for the Foundation on Economic Trends in Washington, D.C, October 10th, 2010, “Industrial Agriculture and Human Survival: The Road Beyond 10/10/10”, <http://www.commondreams.org/view/2010/10/07-9>)

Industrial Food and Farming: A Deadly Root of Global Warming Although transportation, industry, and energy producers are obviously major fossil fuel users and greenhouse gas polluters, not enough people understand that the worst U.S. and global greenhouse gas emitter is “Food Incorporated,” transnational industrial food and farming, of which Monsanto and GMOs constitute a major part. Industrial farming, including 173 million acres of GE soybeans, corn, cotton, canola, and sugar beets, accounts for at least 35% of U.S. greenhouse gas emissions (EPA’s ridiculously low estimates range from 7% to 12%, while some climate scientists feel the figure could be as high as 50% or more). Industrial agriculture, biofuels, and non-sustainable cattle grazing - including cutting down the last remaining tropical rainforests in Latin America and Asia for GMO and chemical-intensive animal feed and biofuels - are also the main driving forces in global deforestation and wetlands destruction, which generate an additional 20% of all climate destabilizing GHGs. In other words the direct (food, fiber, and biofuels production, food processing, food distribution) and indirect damage (deforestation and destruction of wetlands) of industrial agriculture, GMOs, and the food industry are the major cause of global warming. Unless we take down Monsanto and Food Inc. and make the Great Transition to a relocalized system of organic food and farming, we and our children are doomed to reside in Climate Hell. Overall 78% of climate destabilizing greenhouse gases come from CO2, while the remainder come from methane, nitrous oxide, and black carbon or soot. To stabilize the climate we will need to drastically reduce all of these greenhouse gas emissions, not just CO2, and sequester twice as much carbon matter in the soil (through organic farming and ranching, and forest and wetlands restoration) as we are doing presently. Currently GMO and industrial/factory farms (energy and chemical-intensive) farms emit at least 25% of the carbon dioxide (mostly from tractors, trucks, combines, transportation, cooling, freezing, and heating); 40% of the methane (mostly from massive herds of animals belching and farting, and manure ponds); and 96% of nitrous oxide (mostly from synthetic fertilizer manufacture and use, the millions of tons of animal manure from factory-farmed cattle herds, pig and poultry flocks, and millions of tons of sewage sludge spread on farms). Black carbon or soot comes primarily from older diesel engines, slash and burn agriculture, and wood cook stoves. Per ton, methane is 21 times more damaging, and nitrous oxide 310 times more damaging,as a greenhouse gas than carbon dioxide, when measured over a one hundred year period. Damage is even worse if you look at the impact on global warming over the next crucial 20-year period. Many climate scientists admit that they have previously drastically underestimated the dangers of the non-CO2 GHGs, including methane, soot, and nitrous oxide, which are responsible for at least 22% of global warming. Almost all U.S. food and farm-derived methane comes from factory farms, huge herds of confined cows, hogs, and poultry operations, in turn made possible by heavily subsidized ($15 billion per year) GMO soybeans, corn, cottonseed, and canola; as well as rotting food waste thrown into landfills instead of being separated out of the solid waste stream and properly composted. To drastically reduce C02, methane, and nitrous oxide releases we need an immediate consumer boycott, followed by a government ban on factory farms, dairies, and feedlots. To reduce black carbon or soot emissions we will need to upgrade old diesel engines, and provide farmers and rural villagers in the developing world with alternatives to slash and burn agriculture (compost, compost tea, biochar) and non-polluting cook stoves and home heating. We also need to implement mandatory separation and recycling of food wastes and “green garbage” (yard waste, tree branches, etc.) at the municipal level, so that that we can reduce methane emissions from landfills. Mandatory composting will also enable us to produce large quantities of high quality organic compost to replace the billions of pounds of chemical fertilizer and sewage sludge, which are releasing GHGs, destroying soil fertility, polluting our waters, and undermining public health. Nearly all nitrous oxide pollution comes from dumping billions of pounds of synthetic nitrogen fertilizer and sewage sludge on farmland (chemical fertilizers and sludge are banned on organic farms and ranches), mainly to grow GMO crops and animal feed. Since about 80% of U.S. agriculture is devoted to producing non-organic, non-grass fed meat, dairy, and animal products, reducing agriculture GHGs means eliminating the overproduction and over-consumption of GMO crops, factory-farmed meat, and animal products. It also means creating massive consumer demand for organic foods, including pasture-raised, grass-fed animal products. The fact that climate change is now metastasizing into climate chaos is indisputable: massive flooding in Pakistan, unprecedented forest fires in Russia and the Amazon, melting of the glaciers that supply water for crops and drinking water of a billion people in Asia and South America, crop failures in regions all over the globe, record heat waves in the U.S. and Europe, methane leaking from the Arctic tundra and coastlines, killer hurricanes in the Gulf of Mexico and Central America, and steadily spreading pestilence, crop failures, and disease. The realization that every time we eat non-organic processed food, we are ingesting unlabeled, hazardous GMO foods and pesticides is indeed alarming. But the impending threat of industrial food and farming detonating runaway climate change (i.e. moving from our current .8 degree Centigrade average global rise in temperature to 2-6 degrees) is terrifying. Either we rein in industrial food and farming and GMOs, out-of-control politicians and corporations, and make the transition to an organic and green economy or we will perish.

#### *Also creates a positive feedback loop that outweighs other internal links to warming*

*Cassuto and Saville 12 [(David, professor at Pace Law School and the Director of the Brazil-American Institute for Law and Environment, Visiting Professor of Law at the Federal University of Bahia, Brazil; and Sarah, J.D. Candidate, Class of 2012, at Pace Law School) “HOT, CROWDED, AND LEGAL: A LOOK AT INDUSTRIAL AGRICULTURE IN THE UNITED STATES AND BRAZIL” ANIMAL LAW Vol. 18:2] AT*

*Industrial agriculture is the single largest source of greenhouse gases, responsible for approximately one-third of all human-caused greenhouse gas production.24 Consuming just two pounds of beef is the equivalent of leaving a 100-watt light bulb turned on for twenty days continuously25 or driving about forty miles.26 For example, methane can trap heat in the planet’s atmosphere twenty times more effectively than carbon dioxide 27 and stays in the atmosphere for approximately nine to fifteen years.28 Ruminants (including cattle, sheep, and goats) are the largest animal emitters of methane, due to their unusual digestive system.29 A single adult cow emits 176 to 242 pounds of methane per year.30 Beef and dairy cattle accounted for 71% and 24% of methane emissions from livestock in 2009, respectively.31 Because of these methane emissions, as well as the significant amount of fossil fuel used in every aspect of factory farming,32 agriculture emits 18% of the world’s greenhouse gases.33 This is more than most industries, including transportation.34 In addition to its direct impact on climate change, industrial agriculture creates a positive feedback loop that continuously amplifies its contributions. Increased global demand for meat spurs the conversion of forests to pastures and fields for growing feed crops for agricultural animals.35 The pastures and fields require fossil-fuel-based fertilizers and manure production,36 which exacerbates greenhouse gas emissions, and emissions accelerate climate change.37 Elevated temperatures negatively impact animal feed crops, facility climate control costs, and pesticide efficacy.38 These increased costs require more volume, which requires more demand, which then requires more conversion of forests to fields.39 Further, the land that goes to industrial agriculture could be used instead to sequester carbon in trees.40 Thus, utilization of land for carbon-intensive activities incurs opportunity costs as well.*

### Adaptation

#### A shift to small farms is key to adapt to warming, disease, and pests – solves use of pesticides

Ho 13 [(Mae-Wan, Ph. D. in Biochemistry, Postdoctoral Fellow in Biochemical Genetics, in the University of California in San Diego, Senior Research Fellow in Queen Elizabeth College, Lecturer in Genetics and Reader in Biology in Open University, Visiting Reader in Biology at the Open University, and Visiting Professor of Biophysics in Catania University, Sicily) “Paradigm Shift Urgently Needed In Agriculture – UN Agencies Call for an End to Industrial Agriculture & Food System” Permaculture Research Institute Sept 18] AT

UNCTAD (United Nations Conference on Trade and Development) – the developing nations’ equivalent of OECD (Organization for Economic Co-operation and Development) – joins a rising chorus of UN agencies in its latest Trade and Environment Review (TER) [2]. The solution for food security under climate change is a radical transformation of the agriculture and food system that would at the same time eliminate poverty, gender inequality, poor health and malnutrition. The 320 page TER — the work of 63 authors from organisations around the world — provides a coherent, closely argued case backed up by evidence from numerous case studies and surveys showing that these interrelated problems could all be solved by a paradigm shift away from the current industrial agriculture and globalized food system to a conglomerate of small, biodiverse, ecological farms around the world and a localized food system that promotes consumption of local/regional produce. The TER proposal is not dissimilar to that made in ISIS’ special report [3] Food Futures Now: \*Organic \*Sustainable \*Fossil Fuel Free published in 2008, and in the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) [4], which resulted from a three-year consultative process involving 900 participants and 110 countries around the world. The same message was reinforced in several key publications from the FAO (Food and Agriculture Organization) [for example, 5, 6] and UNEP (United Nations Environment Programme) [7] to name but a few. Why small farmers? Small farms predominate in the world today. Of the 1.6 billion ha of global croplands, 800 m ha are smallholder farms cultivated by 99 % of the 2.6 billion farmers; most of the farms are 2 ha or less. Together, smallholder farmers produce 70 % of the food consumed [7], and 70 % of these farmers are women. Small farms are known to be 2 to 10 times as productive as large industrial farms, and much more profitable, not just in the developing world, but also in the developed world [8-10]. Unfortunately, the perverse government agricultural subsidies in developed countries that favour large fossil-fuel intensive farms, the systematic dumping of subsidized export to developing countries, and structural adjustment programmes imposed by the International Monetary Fund and the World Bank on developing countries have all worked to destroy the livelihoods of small family farmers [11, 12]. Over the past decades, small family farms have all but disappeared in developed countries. In the developing world, some 1.4 billion people are undernourished and poor, 70%-80 % living in rural areas, who can no longer afford to buy enough food, even when food is available. The successes of small agro-ecological farmsThe successes of small agro-ecological farms are well known (see [3]). Study after study has documented improvements in yield and income as well as environmental benefits from eliminating agricultural input and polluting runoffs, increase in agricultural and natural biodiversity, reduction in greenhouse gas (GHG) emissions, and most of all, improvements in water retention, carbon sequestration and resilience to climate extremes such as drought and floods. There is evidence of improved nutritional value in organically grown food, not just from reduction or elimination of pesticide residues, but from increased content of vitamins and micronutrients [13].Olivier de Schutter, UN Special Rapporteur on the Right to Food is in no doubt that agroecology is a solution to the crises of food systems and climate change [14]. He cites a study [15] published in 2006 on 286 recent sustainable agriculture projects in 57 developing countries covering 37 million ha (3 per cent of the cultivated area), which found that crop productivity on the 12.6 million farms increased by an average of 79 per cent, while also improving the supply of critical environmental service.Noémi Nemes from FAO points out that an analysis of over 50 economic studies demonstrates that in the majority of cases organic systems are more profitable than non-organic systems [16]. In developed countries, this is due to higher market prices and premiums, or lower production costs, or a combination of the two. In developing countries, greater profitability is due to higher yields and high premiums. The increased profits are accompanied by enormous savings due to reduced damages to the external ecosystems from polluting agrochemicals.The importance of local knowledge and practices and diverse polyculture for resilience to climate change Miguel Altieri at University of California Berkeley and Parviz Koohafkan from FAO stress the importance of biodiversity in agroecological farming for resilience [17], as revealed by three recent studies. In Central American hillsides after Hurricane Mitch, farmers engaged in polyculture with cover crops, intercropping and agroforestry, suffered less damage than their neighbours who practiced conventional monoculture. The survey, spearheaded by the Campesino a Campesino movement, mobilized 100 farmer-technician teams to carry out paired observations of specific agroecological indicators on 1 804 neighbouring sustainable and conventional farms in 360 communities and 24 departments of Guatemala, Honduras and Nicaragua. It found that plots where farmers adopted sustainable farming practices had 20 to 40 % more topsoil, greater soil moisture and less erosion, and experienced smaller economic losses than their conventional neighbours. Similarly in Sotonusco, Chiapas, coffee systems with high levels of vegetation complexity and plant diversity suffered less damage from Hurricane Stan than simplified coffee systems. The same in Cuba; 40 days after Hurricane Ike hit the country in 2008, a farm survey in the provinces of Holguin and Las Tunas found that diversified farms suffered losses of 50 % compared to 90 or 100 % in neighbouring monoculture farms. In addition, agroecologically managed farms showed faster recovery of productivity (80–90 % 40 days after the hurricane) than monoculture farms. All three studies highlight the importance of enhancing plant diversity and complexity in farming systems in reducing vulnerability to extreme climatic events. As many peasant farmers commonly manage polycultures and/or agroforestry systems, their knowledge and practices could provide a valuable source of information for agriculture in times of climate change. It is important for scientists to work with farmers to preserve and enhance this indigenous knowledge. Restoring biodiversity also is the best strategy to resist disease and pests. Another remarkable example of productive and resilient polycultures innovated by farmers is described by Roger Leakey at James Cook University, Cairns, Australia [18]. This involves a three-point action plan to improve and rehabilitate marginal lands, many of which are unproductive or no longer suitable for agriculture.

### MPX

#### Warming is real, anthropogenic, and causes extinction

Richard Schiffman 9/27/13, environmental writer @ The Atlantic citing the Fifth Intergovernmental Panel on Climate Change, “What Leading Scientists Want You to Know About Today's Frightening Climate Report,” The Atlantic, http://www.theatlantic.com/technology/archive/2013/09/leading-scientists-weigh-in-on-the-mother-of-all-climate-reports/280045/

The polar icecaps are melting faster than we thought they would; seas are rising faster than we thought they would; extreme weather events are increasing. Have a nice day! That’s a less than scientifically rigorous summary of the findings of the Fifth Intergovernmental Panel on Climate Change (IPCC) report released this morning in Stockholm.¶ Appearing exhausted after a nearly two sleepless days fine-tuning the language of the report, co-chair Thomas Stocker called climate change “the greatest challenge of our time," adding that “each of the last three decades has been successively warmer than the past,” and that this trend is likely to continue into the foreseeable future.¶ Pledging further action to cut carbon dioxide (CO2) emissions, U.S. Secretary of State John Kerry said, "This isn’t a run of the mill report to be dumped in a filing cabinet. This isn’t a political document produced by politicians... It’s science."¶ And that science needs to be communicated to the public, loudly and clearly. I canvassed leading climate researchers for their take on the findings of the vastly influential IPCC report. What headline would they put on the news? What do they hope people hear about this report?¶ When I asked him for his headline, Michael Mann, the Director of the Earth Systems Science Center at Penn State (a former IPCC author himself) suggested: "Jury In: Climate Change Real, Caused by Us, and a Threat We Must Deal With."¶ Ted Scambos, a glaciologist and head scientist of the National Snow and Ice Data Center (NSIDC) based in Boulder would lead with: "IPCC 2013, Similar Forecasts, Better Certainty." While the report, which is issued every six to seven years, offers no radically new or alarming news, Scambos told me, it puts an exclamation point on what we already know, and refines our evolving understanding of global warming.¶ The IPCC, the indisputable rock star of UN documents, serves as the basis for global climate negotiations, like the ones that took place in Kyoto, Rio, and, more recently, Copenhagen. (The next big international climate meeting is scheduled for 2015 in Paris.) It is also arguably the most elaborately vetted and exhaustively researched scientific paper in existence. Founded in 1988 by the United Nations and the World Meteorological Organization, the IPCC represents the distilled wisdom of over 600 climate researchers in 32 countries on changes in the Earth’s atmosphere, ice and seas. It endeavors to answer the late New York mayor Ed Koch’s famous question “How am I doing?” for all of us. The answer, which won’t surprise anyone who has been following the climate change story, is not very well at all. ¶ It is now 95 percent likely that human spewed heat-trapping gases — rather than natural variability — are the main cause of climate change, according to today’s report. In 2007 the IPCC’s confidence level was 90 percent, and in 2001 it was 66 percent, and just over 50 percent in 1995. ¶ What’s more, things are getting worse more quickly than almost anyone thought would happen a few years back.¶ “If you look at the early IPCC predictions back from 1990 and what has taken place since, climate change is proceeding faster than we expected,” Mann told me by email. Mann helped develop the famous hockey-stick graph, which Al Gore used in his film “An Inconvenient Truth” to dramatize the sharp rise in temperatures in recent times. ¶ Mann cites the decline of Arctic sea ice to explain : “Given the current trajectory, we're on track for ice-free summer conditions in the Arctic in a matter of a decade or two... There is a similar story with the continental ice sheets, which are losing ice — and contributing to sea level rise — at a faster rate than the [earlier IPCC] models had predicted.”¶ But there is a lot that we still don’t understand. Reuters noted in a sneak preview of IPCC draft which was leaked in August that, while the broad global trends are clear, climate scientists were “finding it harder than expected to predict the impact in specific regions in coming decades.”¶ From year to year, the world’s hotspots are not consistent, but move erratically around the globe. The same has been true of heat waves, mega-storms and catastrophic floods, like the recent ones that ravaged the Colorado Front Range. There is broad agreement that climate change is increasing the severity of extreme weather events, but we’re not yet able to predict where and when these will show up. ¶ “It is like watching a pot boil,” Danish astrophysicist and climate scientist Peter Thejll told me. “We understand why it boils but cannot predict where the next bubble will be.”¶ There is also uncertainty about an apparent slowdown over the last decade in the rate of air temperature increase. While some critics claim that global warming has “stalled,” others point out that, when rising ocean temperatures are factored in, the Earth is actually gaining heat faster than previously anticipated.¶ “Temperatures measured over the short term are just one parameter,” said Dr Tim Barnett of the Scripps Institute of Oceanography in an interview. “There are far more critical things going on; the acidification of the ocean is happening a lot faster than anybody thought that it would, it’s sucking up more CO2, plankton, the basic food chain of the planet, are dying, it’s such a hugely important signal. Why aren’t people using that as a measure of what is going on?”¶ Barnett thinks that recent increases in volcanic activity, which spews smog-forming aerosols into the air that deflect solar radiation and cool the atmosphere, might help account for the temporary slowing of global temperature rise. But he says we shouldn’t let short term fluctuations cause us to lose sight of the big picture.¶ The dispute over temperatures underscores just how formidable the IPCC’s task of modeling the complexity of climate change is. Issued in three parts (the next two installments are due out in the spring), the full version of the IPCC will end up several times the length of Leo Tolstoy’s epic War and Peace. Yet every last word of the U.N. document needs to be signed off on by all of the nations on earth. ¶ “I do not know of any other area of any complexity and importance at all where there is unanimous agreement... and the statements so strong,” Mike MacCracken, Chief Scientist for Climate Change Programs, Climate Institute in Washington, D.C. told me in an email. “What IPCC has achieved is remarkable (and why it merited the Nobel Peace Prize granted in 2007).”¶ Not surprisingly, the IPCC’s conclusions tend to be “conservative by design,” Ken Caldeira, an atmospheric scientist with the Carnegie Institution’s Department of Global Ecology told me: “The IPCC is not supposed to represent the controversial forefront of climate science. It is supposed to represents what nearly all scientists agree on, and it does that quite effectively.”¶ Nevertheless, even these understated findings are inevitably controversial. Roger Pielke Jr., the Director of the Center for Science and Technology Policy Research at the University of Colorado, Boulder suggested a headline that focuses on the cat fight that today’s report is sure to revive: "Fresh Red Meat Offered Up in the Climate Debate, Activists and Skeptics Continue Fighting Over It." Pielke should know. A critic of Al Gore, who has called his own detractors "climate McCarthyists," Pielke has been a lightning rod for the political controversy which continues to swirl around the question of global warming, and what, if anything, we should do about it. ¶ The public’s skepticism of climate change took a dive after Hurricane Sandy. Fifty-four percent of Americans are now saying that the effects of global warming have already begun. But 41 percent surveyed in the same Gallup poll believe news about global warming is generally exaggerated, and there is a smaller but highly passionate minority that continues to believe the whole thing is a hoax. ¶ For most climate experts, however, the battle is long over — at least when it comes to the science. What remains in dispute is not whether climate change is happening, but how fast things are going to get worse.¶ There are some possibilities that are deliberately left out of the IPCC projections, because we simply don’t have enough data yet to model them. Jason Box, a visiting scholar at the Byrd Polar Research Center told me in an email interview that: “The scary elephant in the closet is terrestrial and oceanic methane release triggered by warming.” The IPCC projections don’t include the possibility — some scientists say likelihood — that huge quantities of methane (a greenhouse gas thirty times as potent as CO2) will eventually be released from thawing permafrost and undersea methane hydrate reserves. Box said that the threshhold “when humans lose control of potential management of the problem, may be sooner than expected.”¶ Box, whose work has been instrumental in documenting the rapid deterioration of the Greenland ice sheet, also believes that the latest IPCC predictions (of a maximum just under three foot ocean rise by the end of the century) may turn out to be wildly optimistic, if the Greenland ice sheet breaks up. “We are heading into uncharted territory” he said. “We are creating a different climate than the Earth has ever seen.” ¶ The head of the IPCC, Rajendra Pachauri, speaks for the scientific consensus when he says that time is fast running out to avoid the catastrophic collapse of the natural systems on which human life depends. What he recently told a group of climate scientist could be the most chilling headline of all for the U.N. report: ¶ "We have five minutes before midnight."

#### Warming triggers every other impact – also causes wars over land

Ginsborg et al. 12 – Mikkel Funder, Signe Marie Cold-Ravnkilde and Ida Peters Ginsborg - in collaboration with Nanna Callisen Bang, Denmark Institute for International Studies, 2012, "ADDRESSING CLIMATE CHANGE AND CONFLICT IN DEVELOPMENT COOPERATION EXPERIENCES FROM NATURAL RESOURCE MANAGEMENT" www.diis.dk/graphics/Publications/Reports2012/RP2012-04-Addressing-climate-change\_web.jpg.pdf

2.2 Climate change as a conﬂict multiplier¶ Climate change is therefore best seen as a conﬂict multiplier, rather than as a major direct cause of conﬂict in itself. Climate change may aggravate and extend the scope of existing conﬂicts, or trigger underlying and latent conﬂicts to break out into the open. ¶ Previous studies have identiﬁed a number of areas in which climate change may contribute to a worsening of conﬂicts (Brown & Crawford 2009). These include:¶ • Land and water access. Access and use rights to land are a key feature in most situations where climate change has contributed to natural resource conﬂicts so far. Climate change can intensify existing conﬂicts over land, as land becomes less fertile or is ﬂooded, or if existing resource sharing arrangements between diﬀerent users and land use practices are disrupted. In some parts of Africa, climate change may lead to a decline in available water resources of some 10–20% by the end of the century (op cit.). This may intensify existing competition for access to water at intra-state and/or subnational levels. • Food security. Reduced rainfall and rising sea levels may lead to a decline in agricultural production and a substantial loss of arable land in some parts of Africa. Reduced yields for own consumption and increasing domestic food prices may in some cases lead to civil unrest, and competition over access to land may intensify.¶ • Migration and displacement. In some cases, increased scarcity of and competition over access to water and arable land may contribute to internal or regional migration, and disasters such as ﬂoods may lead to temporary or long-term local displacement. This may in turn strengthen conﬂicts between host societies/communities and migrants looking for access to new land and resources. ¶ • Increasing inequality and injustice. Through processes such as the above, some population groups may be particularly hard hit, leading to increased inequality and a sense of injustice. This may intensify existing grievances and disputes between natural resource users and/or between resource users and outside actors such as governments – thereby increasing the risk and intensity of conﬂict.

## Phospho

### Phospho Wars

#### Industrial ag uses phosphorous unsustainably – organic farming is key

Oliveira 11 [Caroline Felix Oliveira, Addressing the Phosphate Crisis: Precision Agriculture versus Agroecology, University of Florida Honor’s Thesis, 4/20/2011, pg. www.honors.ufl.edu/apps/Thesis.aspx/Download/945]

Industrial agriculture has jeopardized the availability of phosphate for future generations. Agriculture’s dependence on chemical fertilizers has directly impacted the sources of economically available phosphate, in turn affecting the balance of global P flow. These concerns have risen from the inefficiencies of our current system. Florida has been a significant contributor to the phosphate mining industry, but has suffered from rising global competition. As a result, this imminent crisis challenges the continuation of current agricultural practices, not only in Florida but world-wide. Despite the contentions towards sustainability, it has been successful in bringing to light the environmental and social concerns caused by industrial farming. IFM is a viable method to systematically implement sustainability through sustainable farm management. This approach can help restore global P flows by minimizing nutrient input and by maximizing nutrient recycling. Through this methodology, the integration of precision agriculture and agroecology combines the technology for minimal input and the natural processes for maximizing P recycling. Amidst the negativity that is associated with a crisis, there is still prosperity for positive outcomes. The positive outcome brought forth by is the potential to pressure research and development of alternative agricultural methods. The success of sustainable farming lies in the institutionalization of alternative agriculture as the standard for farming. This process may require additional incentives, markets or infrastructure for large scale implementation and increased public awareness of the crisis. During this transition, it is important to acknowledge that food is not just another commodity, but is deeply ingrained into a nation’s culture and the foundation for social wellbeing. Knowledge of the global P cycle must be interwoven in the fabric of society and integrated into food production, thus “ecologizing” the economy towards sustainable farm management.

#### The impact is famine and global phosphorus wars

Elser & White 10—Professor of Ecology @ Arizona State University & Director of the Institute for Sustainable Futures @ University of Technology [James Elser & Stuart White, “Peak Phosphorus,” Foreign Policy, April 20, 2010, pg. http://www.foreignpolicy.com/articles/2010/04/20/peak\_phosphorus?page=full]

From Kansas to China's Sichuan province, farmers treat their fields with phosphorus-rich fertilizer to increase the yield of their crops. What happens next, however, receives relatively little attention. Large amounts of this resource are lost from farm fields, through soil erosion and runoff, and down swirling toilets, through our urine and feces. Although seemingly mundane, this process cannot continue indefinitely. Our dwindling supply of phosphorus, a primary component underlying the growth of global agricultural production, threatens to disrupt food security across the planet during the coming century. This is the gravest natural resource shortage you've never heard of. The root of this problem has previously been the subject of presidential concern. In a message to Congress in 1938, U.S. President Franklin D. Roosevelt warned that the phosphorus content of American agricultural land "has greatly diminished." This shortage, Roosevelt warned, could cause low crop yields and poor-quality produce, detrimentally affecting "the physical health and economic security of the people of the nation." Phosphorus is used extensively for a variety of key functions in all living things, including the construction of DNA and cell membranes. As it is relatively rare in the Earth's crust, a lack of phosphorus is often the limiting factor in the growth of plants and algae. In humans, it plays an essential role in bone formation. Without a steady supply of this resource, global agricultural production willface abottleneck, and humankind's growing population will suffer a serious nutrition shortage. The world's reliance on phosphorus is an unappreciated aspect of the "Green Revolution," a series of agricultural innovations that made it possible to feed the approximately 4.2 billion-person increase in the global population since 1950. This massive expansion of global agricultural production required a simultaneous increase in the supply of key resources, including water and nitrogen. Without an increase in phosphorus, however, crops would still have lacked the resources necessary to fuel a substantial increase in production, and the Green Revolution would not have gotten off the ground. Roosevelt's warning was prescient and stimulated agricultural engineers to find an effective, albeit temporary, solution. To satisfy the world's growing food demand, they mobilized global mining efforts in ancient, phosphorus-rich marine deposits. By 2008, industrial farmers were applying an annual 17 million metric tons of mined phosphorus on their fields. Demand is expanding at around 3 percent a year -- a rate that is likely to accelerate due to rising prosperity in the developing world (richer people consume more meat) and the burgeoning bioenergy sector, which also requires phosphorus to support crop-based biofuels. Our supply of mined phosphorus is running out. Many mines used to meet this growing demand are degrading, as they are increasingly forced to access deeper layers and extract a lower quality of phosphate-bearing rock (phosphate is the chemical form in which nearly all phosphorus is found). Some initial analyses from scientists with the Global Phosphorus Research Initiative estimate that there will not be sufficient phosphorus supplies from mining to meet agricultural demand within 30 to 40 years. Although more research is clearly needed, this is not a comforting time scale. The geographic concentration of phosphate mines also threatens to usher in an era of intense resource competition. Nearly 90 percent of the world's estimated phosphorus reserves are found in five countries: Morocco, China, South Africa, Jordan, and the United States. In comparison, the 12 countries that make up the OPEC cartel control only 75 percent of the world's oil reserves.This fact could spark international tension and even influence how countries attempt to draw their internal boundaries. Many of Morocco's phosphate mines are in Western Sahara, a disputed independent territory that is occupied by Morocco and the site of growing international human rights concerns. Reflecting these concerns, U.N.-sanctioned export restrictions on phosphate and other resources are now in place, though the efficacy of the bans is incomplete. China, the country with the largest phosphorus reserves after Morocco, imposed a 135 percent tariff on the resource as part of 2008's complex series of events in which rising fuel and fertilizer costs led to rapid increases in food prices. The tariff effectively eliminated exports. Although the tariff was subsequently lifted as the 2008 food crisis faded, the imposition of this sort of trade barrier could become a regular occurrence as supplies dwindle worldwide. The United States has only 12 phosphorus mines. The supplies from the most productive mine, in Florida, are declining rapidly -- it will be commercially depleted within 20 years. The United States exported phosphorus for decades but now imports about 10 percent of its supply, all from Morocco, with which it signed a free trade agreement in 2004. The effects of this resource shortage will be felt long before the last phosphorus atom is extracted from the last mine. Increased demand for fertilizer and the decreased supply of phosphorus exports will result in higher prices, significantly affecting millions of farmers in the developing world who live on the brink of bankruptcy and starvation. Rising fertilizer prices could tip this balance. Already, signs are emerging that our current practices cannot continue for long. Between 2003 and 2008, phosphate fertilizer prices rose approximately 350 percent. In 2008, rising food prices sparked riots in more than 40 countries. Although the spike in fertilizer prices was only partially responsible for the higher food prices, the riots illustrate the social upheaval caused by disruptions to the world's food supply. The 2008 food riots were only stopped by government promises of food subsidies -- a viable strategy only as long as governments can afford the ever-increasing costs of food support. Establishing a reliable phosphorus supply is essential for assuring long-term, sustainable food security. We need to dramatically reduce the demand for phosphate rock by eliminating our wasteful practices. This will require a combination of low-tech and high-tech solutions, including efforts to prevent soil erosion, development of more-targeted methods of fertilizer application, and the creation of new, phosphorus-efficient crops, which produce a larger yield per phosphorus unit applied. Fortunately, unlike fossil fuels, phosphorus can be used over and over -- this is what occurs in natural ecosystems, where it is recycled innumerable times from its first mobilization from the Earth's crust to its eventual deposition into lake and ocean sediments. If we fail to meet this challenge, humanity faces a Malthusian trap of widespread famine on a scale that we have not yet experienced. The geopolitical impacts of such disruptions will be severe, as an increasing number of states fail to provide their citizens with a sufficient food supply. This dark scenario need not, however, be our fate. If we are successful in rising to the phosphorus sustainability challenge, as well as other aspects of sustainable agriculture, we can look forward to a future in which families, communities, and countries are healthy and secure in their nutrition and where all live in a world with cleaner rivers, lakes, and oceans.

## Water

### Water Efficiency

#### A shift solves global water crisis

Pretty 6—Professor of Environment and Society at University of Essex [Jules Pretty, Agroecological Approaches to Agricultural Development, Background Paper for the World Development Report 2008, November 2006]

Widespread appreciation of the `global water crisis’ recognizes that scarcity of clean water is affecting food production and conservation of ecosystems. By 2025 it is predicted that most developing countries will face either physical or economic water scarcity. Water diverted from rivers increased six fold between 1900 and 1995, far outpacing population growth. Increasing demand for fresh water now threatens the integrity of many aquatic ecosystems, and their associated environmental services. As agriculture accounts for 70% of current water withdrawals from rivers, so improving the productivity of water use in agriculture is a growing challenge. The potential for increasing food production while maintaining water-related ecosystem services rests on capacity to increase water productivity (WP), i.e. by realizing more kg of food per unit of water. Sustainable agricultural practices may do this by: i) removing limitations on productivity by enhancing soil fertility; ii) reducing soil evaporation through conservation tillage; iii) using more water efficient varieties; iv) reducing water losses to unrecoverable sinks; v) boosting productivity by supplemental irrigation in rainfed systems; and vi) inducing microclimatic changes to reduce crop water requirements (23). We calculated changes in WP for field crops in 144 projects from the data set (Table 5) based on reported crop yields and average potential evapotranspiration (ETp), for each project location during the relevant growing season. Actual evapotranspiration (ETa) was assumed to equal 80% of ETp, and ETa to remain a constant at different levels of productivity. Pg. 19

#### Water crises cause escalating global conflict

Rasmussen 11 [(Erik, CEO, Monday Morning; Founder, Green Growth Leaders) “Prepare for the Next Conflict: Water Wars” HuffPo 4/12] AT

For years experts have set out warnings of how the earth will be affected by the water crises, with millions dying and increasing conflicts over dwindling resources. They have proclaimed -- in line with the report from the US Senate -- that the water scarcity is a security issue, and that it will yield political stress with a risk of international water wars. This has been reflected in the oft-repeated observation that water will likely replace oil as a future cause of war between nations. Today the first glimpses of the coming water wars are emerging. Many countries in the Middle East, Africa, Central and South Asia -- e.g. Afghanistan, Pakistan, China, Kenya, Egypt, and India -- are already feeling the direct consequences of the water scarcity -- with the competition for water leading to social unrest, conflict and migration. This month the escalating concerns about the possibility of water wars triggered calls by Zafar Adeel, chair of UN-Water, for the UN to promote "hydro-diplomacy" in the Middle East and North Africa in order to avoid or at least manage emerging tensions over access to water. The gloomy outlook of our global fresh water resources points in the direction that the current conflicts and instability in these countries are only glimpses of the water wars expected to unfold in the future. Thus we need to address the water crisis that can quickly escalate and become a great humanitarian crisis and also a global safety problem. A revolution The current effort is nowhere near what is needed to deal with the water-challenge -- the world community has yet to find the solutions. Even though the 'water issue' is moving further up the agenda all over the globe: the US foreign assistance is investing massively in activities that promote water security, the European Commission is planning to present a "Blueprint for Safeguarding Europe's Water" in 2012 and the Chinese government plans to spend $600 billion over the next 10 years on measures to ensure adequate water supplies for the country. But it is not enough. The situation requires a response that goes far beyond regional and national initiatives -- we need a global water plan. With the current state of affairs, correcting measures still can be taken to avoid the crisis to be worsening. But it demands that we act now. We need a new way of thinking about water. We need to stop depleting our water resources, and urge water conservation on a global scale. This calls for a global awareness that water is a very scarce and valuable natural resource and that we need to initiate fundamental technological and management changes, and combine this with international solidarity and cooperation. In 2009, The International Water Management Institute called for a blue revolution as the only way to move forward: "We will need nothing less than a 'Blue Revolution', if we are to achieve food security and avert a serious water crisis in the future" said Dr. Colin Chartres, Director General of the International Water Management Institute. This meaning that we need ensure "more crop per drop": while many developing countries use precious water to grow 1 ton of rice per hectare, other countries produce 5 tons per hectare under similar social and water conditions, but with better technology and management. Thus, if we behave intelligently, and collaborate between neighbors, between neighboring countries, between North and South, and in the global trading system, we shall not 'run out of water'. If we do not, and "business as usual" prevails, then water wars will accelerate.

### Urbanization Internal

#### AND, small farmers prevent urbanization and megacities

Altieri 9—Professor of Agroecology at University of California, Berkeley [Miguel A. Altieri (Ph.D. in Entomology from the University of Florida), “Agroecology, Small Farms, and Food Sovereignty,” Monthly Review, 2009, Volume 61, Issue 03 (July-August), http://monthlyreview.org/2009/07/01/agroecology-small-farms-and-food-sovereignty]

The inverse relationship between farm size and output can be attributed to the more efficient use of land, water, biodiversity, and other agricultural resources by small farmers. So in terms of converting inputs into outputs, society would be better off with small-scale farmers. Building strong rural economies in the Global South based on productive small-scale farming will allow the people of the South to remain with their families in the countryside. This will help to stem the tide of out-migration into the slums of cities that do not have sufficient employment opportunities. As the world’s population continues to grow, redistributing farmland may become central to feeding the planet, especially when large-scale agriculture devotes itself to feeding cars through growing agrofuel feedstocks.

#### Megacities destroy the water cycle – causes extinction

GNG 12 (Global Nomad Group, an international NGO whose mission is to foster dialogue and understanding among the world’s youth, http://gng.org/wp-content/uploads/2012/12/Module-2-Flows-and-Cycles1.pdf?f22064)JFS

The water cycle renews fresh water, one of the most important resources for life on earth. Water is needed for food production, economic development and human survival. Climate change is predicted to have a range of impacts on water resources. Variation in temperature and rainfall may affect water availability, increase the frequency and severity of floods and droughts, and disrupt ecosystems that maintain water quality.5 By 2023, 1800 million people will be living in countries or regions with absolute water scarcity, and two-thirds of the world pollution could be under stress conditions.6 Water shortages are an important concern because they can increase conflict and public health problems, reduce food production and endanger the environment. In China, underwater aquifers that take millennia to fill have been depleted by the rapid growth of megacities with surging populations.7 Like China, many countries and regions are now satisfying the demand for water by withdrawing groundwater faster than it is replenished, thereby potentially depleting their supply for future generations. This type of mismanagement can lead to major disruptions in the natural water cycle. Creating a sustainable future will depend on learning how to effectively manage water resources. We must understand the capacities and limitations of the natural water cycle, the consequences of overdrawing water resources and how to conserve water resources that are still available.

### Water Impact

#### Megacities destroy the water cycle – causes extinction

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### YES WATER WARS

### Goes Nuclear

#### That goes nuclear

Zahoor 12 (Musharaf, Researcher at Department of Nuclear Politics – National Defense University, *Water Crisis can Trigger Nuclear War in South Asia*, http://www.siasat.pk)

Water is an ambient source, which unlike human beings does not respect boundaries. Water has been a permanent source of conflict between the tribes since biblical times and now between the states. The conflicts are much more likely among those states, which are mainly dependent on shared water sources. The likelihood of turning these conflicts into wars is increased when these countries or states are mainly arid or receive low precipitations. In this situation, the upper riparian states (situated on upper parts of a river basin) often try to maximize water utility by neglecting the needs of the lower riparian states (situated on low lying areas of a river basin). However, international law on distribution of trans-boundary river water and mutually agreed treaties by the states have helped to some extent in overcoming these conflicts. In the recent times, the climate change has also affected the water availability. The absence of water management and conservation mechanisms in some regions particularly in the third world countries have exacerbated the water crisis. These states have become prone to wars in future. South Asia is among one of those regions where water needs are growing disproportionately to its availability. The high increase in population besides large-scale cultivation has turned South Asia into a water scarce region. The two nuclear neighbors Pakistan and India share the waters\*\* of Indus Basin. All the major rivers stem from the Himalyan region and pass through Kashmir down to the planes of Punjab and Sindh empty into Arabic ocean. It is pertinent that the strategic importance of Kashmir, a source of all major rivers, for Pakistan and symbolic importance of Kashmir for India are maximum list positions. Both the countries have fought two major wars in 1948, 1965 and a limited war in Kargil specifically on the Kashmir dispute. Among other issues, the newly born states fell into water sharing dispute right after their partition. Initially under an agreed formula, Pakistan paid for the river waters to India, which is an upper riparian state. After a decade long negotiations, both the states signed Indus Water Treaty in 1960. Under the treaty, India was given an exclusive right of three eastern rivers Sutlej, Bias and Ravi while Pakistan was given the right of three Western Rivers, Indus, Chenab and Jhelum. The tributaries of these rivers are also considered their part under the treaty. It was assumed that the treaty had permanently resolved the water issue, which proved a nightmare in the latter course. India by exploiting the provisions of IWT started wanton construction of dams on Pakistani rivers thus scaling down the water availability to Pakistan (a lower riparian state). The treaty only allows run of the river hydropower projects and does not permit to construct such water reservoirs on Pakistani rivers, which may affect the water flow to the low lying areas. According to the statistics of Hydel power Development Corporation of Indian Occupied Kashmir, India has a plan to construct 310 small, medium and large dams in the territory. India has already started work on 62 dams in the first phase. The cumulative dead and live storage of these dams will be so great that India can easily manipulate the water of Pakistani rivers. India has set up a department called the Chenab Valley Power Projects to construct power plants on the Chenab River in occupied Kashmir. India is also constructing three major hydro-power projects on Indus River which include Nimoo Bazgo power project, Dumkhar project and Chutak project. On the other hand, it has started Kishan \*\*\*\*\* hydropower project by diverting the waters of Neelum River, a tributary of the Jhelum, in sheer violation of the IWT. The gratuitous construction of dams by India has created serious water shortages in Pakistan. The construction of Kishan \*\*\*\*\* dam will turn the Neelum valley, which is located in Azad Kashmir into a barren land. The water shortage will not only affect the cultivation but it has serious social, political and economic ramifications for Pakistan. The farmer associations have already started protests in Southern Punjab and Sindh against the non-availability of water. These protests are so far limited and under control. The reports of international organizations suggest that the water availability in Pakistan will reduce further in the coming years. If the situation remains unchanged, the violent mobs of villagers across the country will be a major law and order challenge for the government. The water shortage has also created mistrust among the federative units, which is evident from the fact that the President and the Prime Minister had to intervene for convincing Sindh and Punjab provinces on water sharing formula. The Indus River System Authority (IRSA) is responsible for distribution of water among the provinces but in the current situation it has also lost its credibility. The provinces often accuse each other of water theft. In the given circumstances, Pakistan desperately wants to talk on water issue with India. The meetings between Indus Water Commissioners of Pakistan and India have so far yielded no tangible results. The recent meeting in Lahore has also ended without concrete results. India is continuously using delaying tactics to under pressure Pakistan. The Indus Water Commissioners are supposed to resolve the issues bilaterally through talks. The success of their meetings can be measured from the fact that Pakistan has to knock at international court of arbitration for the settlement of Kishan \*\*\*\*\* hydropower project. The recently held foreign minister level talks between both the countries ended inconclusively in Islamabad, which only resulted in heightening the mistrust and suspicions. The water stress in Pakistan is increasing day by day. The construction of dams will not only cause damage to the agriculture sector but India can manipulate the river water to create inundations in Pakistan. The rivers in Pakistan are also vital for defense during wartime. The control over the water will provide an edge to India during war with Pakistan. The failure of diplomacy, manipulation of IWT provisions by India and growing water scarcity in Pakistan and its social, political and economic repercussions for the country can lead both the countries toward a war. The existent asymmetry between the conventional forces of both the countries will compel the weaker side to use nuclear weapons to prevent the opponent from taking any advantage of the situation. Pakistan's nuclear programme is aimed at to create minimum credible deterrence. India has a declared nuclear doctrine which intends to retaliate massively in case of first strike by its' enemy. In 2003, India expanded the operational parameters for its nuclear doctrine. Under the new parameters, it will not only use nuclear weapons against a nuclear strike but will also use nuclear weapons against a nuclear strike on Indian forces anywhere. Pakistan has a draft nuclear doctrine, which consists on the statements of high ups. Describing the nuclear thresh-hold in January 2002, General Khalid Kidwai, the head of Pakistan's Strategic Plans Division, in an interview to Landau Network, said that Pakistan will use nuclear weapons in case India occupies large parts of its territory, economic strangling by India, political disruption and if India destroys Pakistan's forces. The analysis of the ambitious nuclear doctrines of both the countries clearly points out that any military confrontation in the region can result in a nuclear catastrophe. The rivers flowing from Kashmir are Pakistan's lifeline, which are essential for the livelihood of 170 million people of the country and the cohesion of federative units. The failure of dialogue will leave no option but to achieve the ends through military means. The only way to discard the lurking fear of a nuclear cataclysm is to settle all the outstanding disputes amicably through dialogue. The international community has a special role in this regard. It should impress upon India to initiate meaningful talks to resolve the lingering Kashmir dispute with Pakistan and implement the water treaty in its letter and spirit. The Indian leadership should drive out its policy towards Pakistan from terrorism mantra to a solution-oriented dialogue process. Both the countries should adopt a joint mechanism to maximize the utility of river waters by implementing the 1960 treaty, Besides negotiations with India, Pakistan should start massive water conservation and management projects. The modern techniques in agriculture like i.e. drip irrigation, should be adopted. On the other hand, there is a dire need to gradually upgrade the obsolete irrigation system in Pakistan. The politicization of mega hydropower projects/dams is also a problem being faced by Pakistan, which can only be resolved through political will.

### Link Wall

#### High Seed usage

Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

The other resource which is overused by industrial agricultural methods is water. As mentioned earlier, high-response seeds grow well only when water is plentiful. The water tables, however, are falling in key food-producing countries. 480 million of the world’s 6 billion people are fed with grain produced by overpumping aquifers. This is already creating serious water shortages in various countries today. Regions suffering from aquifer depletion include central and northern China, northwest and southern India, parts of Pakistan, much of western United States, North Africa, the Middle East and Arabian Peninsula. Besides constraining future food supply, groundwater overpumping is widening the income gap between the rich and poor. The poor cannot afford to deepen their wells or buy stronger pumps. As the shallower wells dry up, some of the small-scale, poorer farmers end up renting their land to the larger well owners and become labourers on these larger farms. Agronomic systems of agricultural production, for example, intercropping to maximize use of soil moisture, as well as better matching crops to climate conditions can reduce the pressure on water supply, and increase the opportunities for small farmers to maintain their livelihoods. The point made here is that extra resources used by the industrial systems, such as Green Revolution techniques, could have gone to feed people. These systems are resource wasteful and rely on intensive external inputs, including water and land. The emerging Gene Revolution (which is similarly input-intensive) promises to be as resource wasteful. These systems take away the entitlements from those most in need, and add to food insecurity and poverty in developing countries.

## Techniques

### GMOs---Genetic Pollution

#### AND, they prevent the spread of genetic pollution.

Altieri 9—Professor of Agroecology at University of California, Berkeley [Miguel A. Altieri (Ph.D. in Entomology from the University of Florida), “Agroecology, Small Farms, and Food Sovereignty,” Monthly Review, 2009, Volume 61, Issue 03 (July-August), http://monthlyreview.org/2009/07/01/agroecology-small-farms-and-food-sovereignty]

It is crucial to protect areas of peasant agriculture free of contamination from GMO crops. Maintaining pools of genetic diversity, geographically isolated from any possibility of cross fertilization or genetic pollution from uniform transgenic crops, will create “islands” of intact genetic resources to act as safeguards against the potential ecological failure derived from the Second Green Revolution increasingly being imposed with programs such as the Gates-Rockefeller AGRA in Africa. These genetic sanctuary islands will also serve as the only source of GMO-free seeds that will be needed to repopulate the organic farms in the North that will inevitably be contaminated by the advance of transgenic agriculture. The small farmers and indigenous communities of the Global South, with the help of scientists and NGOs, can continue being the creators and guardians of a biological and genetic diversity that has enriched the food culture of the whole planet.

#### It will destroy the planet’s bioshere

Earth Talk 11 [E Magazine, edited by Roddy Scheer and Doug Moss, “Genetic pollution from GMOs threatens genetic diversity and global food security,” Fri, Sep 23, 2011 at 11:00 AM, pg. http://m.cltampa.com/dailyloaf/archives/2011/09/23/genetic-pollution-from-gmos-threatens-genetic-diversity-and-global-food-security]

Genetic pollution is the release into the natural environment of these altered genes, creating the risk that they might breed with wild plants or animals and spread out uncontrollably. Reports author Jeremy Rifkin in his landmark 1998 book, The Biotech Century: “Some of those releases…could wreak havoc with the planet’s biosphere, spreading destabilizing and even deadly genetic pollution across the world.” To follow through on the previous crop seed example: If herbicide-resistant, Genetically Engineered crops were to breed with their wild cousins, it could lead to the creation of super-weeds undeterred by control efforts. The weeds could, in turn, edge out native species and drive them to extinction, causing an overall loss of genetic diversity. According to Greenpeace, crop genetic diversity is “essential for global food security” and a lack of it can be linked to many of the major crop epidemics in human history, including the Southern corn leaf blight in the U.S. in 1970. They quote noted botanist Jack Harlan who said that genetic diversity is all that “stands between us and catastrophic starvation on a scale we can not imagine.”

### Monocultures---Extinction

#### Industrial ag forces monocultures.

C. Picone and D. Van Tassel 2. Research Scientsist at the Land Institute and Professor and Chair of the Department of History at Case Western Reserve University. “Agriculture and Biodiversity Loss: Industrial Agriculture,” The Land Institute, http://www.landinstitute.org/vnews/display.v/ART/2002/08/23/439bd36c9acf1.

Mechanization requires farms to have uniform crop types, structures, and management practices (for example, planting and harvesting dates). As a result, crop diversity has declined on most farms over the last century. For example, traditional farms, especially in the tropics, may include grains, root crops, vegetables, spices, medicinal plants, livestock, and trees for lumber, fruit, and firewood. In contrast, most modern farms are monocultures — that is, they have only one crop species planted over a large area. Farms with low crop diversity have poor "associated diversity" of species that were not assembled directly, such as insects, birds, and soil organisms. The use of monocultures increases a farm's dependence on pesticides. Pests such as insects and pathogens (disease-causing organisms) can find their food sources more easily in monocultures than in diverse crop mixtures. Monocultures also have lower populations of the natural enemies of pests, such as spiders, wasps, dragonflies, and predatory beetles. The genetic diversity of crops has declined with industrial agriculture. Although hundreds of edible plant species have been important in traditional crop systems, today only three crops — rice, wheat, and corn — provide 60 percent of our plant-based diet worldwide. Diversity within crops also has declined because traditional varieties, or landraces, have been replaced by a few high-yielding varieties. This process is called genetic erosion. According to the Food and Agriculture Organization of the United Nations, 75 percent of crop diversity was lost during the twentieth century. Modern varieties have supplanted traditional varieties for 70 percent of the word's corn, 75 percent of Asian rice, and half of the wheat in Africa, Latin America, and Asia. In 1950, India had 30,000 wild varieties of rice, but by 2015 only 50 are expected to remain. The loss of genetic diversity within crops is important for plant breeding. Much of the increased yield in modern crops is owed to the genetic diversity in traditional varieties. Landraces of many crops have provided the genes needed for pest and disease resistance, or to adapt crops to poor soils, drought, and cold temperatures. By losing landraces we are undermining our ability to adapt crops to future conditions, including climate change.

#### Monocultures cause extinction

Fowler and Mooney 90 [Cary Fowler and Pat Mooney, 1990. Senior Officer at the UN Food and Agriculture Organization and Staff Member at the Rural Advancement Fund International. Shattering: Food, Politics, and the Loss of Genetic Diversity]

Whilst many may ponder the consequences of global warming, perhaps the biggest single environmental catastrophe in human history is unfolding in the garden. While all are rightly concerned about the possibility of nuclear war, an equally devastating time bomb is ticking away in the fields of farmers all over the world. Loss of genetic diversity in agriculture- silent, rapid, inexorable- is leading us to rendezvous with extinction- to the doorstep of hunger on a scale we refuse to imagine. To simplify the environment as we have done with agriculture is to destroy the complex interrelationships that hold the natural world together. Reducing the diversity of life, we narrow our options for the future and render our own survival more precarious. It is life at the end of the limb. That is the subject of this book.

### Monocultures---Sustainability

#### Monocultures are prone to collapse

Butler 12 [(Rhett, founder president and editor-in-chief of mongabay.com, senior writer of the site, runs WildMadagascar.org, a site that highlights the biological richness of Madagascar and reports on environmental news for the nation, co-founder of Tropical Conservation Science and the Tropical Forest Network) “THE IMPACT OF INDUSTRIAL AGRICULTURE IN RAINFORESTS” Mongabay Jul 28] AT

However, there are several problems with this type of monoculture (single crop plantations) in the tropics, besides the loss of forest. First, such planting of a single crop makes the crop highly vulnerable to disease and pests. In natural rainforest, widespread infestations are rare because individuals of a given species are widely dispersed. Second, the planting of monocultures can be economically risky with the price fluctuations so common in international commodities markets. Additionally, a single cold spell or drought can devastate a substantial segment of the agricultural economy. The cultivation of some of these crops in mountainous, watershed areas has adverse effects for the environment, notably the alteration of water cycles and erosion. In Peru, the cultivation of coca plants (containing the basic ingredient for cocaine) was so widespread in the Andean foothills during the 1980s and 1990s that Peruvian river flood cycles were altered in some areas, making the high-water season unpredictable. The most serious environmental concern (other than deforestation) stemming from the cultivation of coca is the dumping of chemicals (including kerosene, sulfuric acid, acetone, and carbide) used to process coca leaves. However, stopping coca cultivation is nearly impossible due to simple economics: no crop outperforms coca.

### Monocultures---Right to Food

#### Future needs for farming are unpredictable—we have a moral obligation to keep genetic options open for future generations

Fowler and Mooney 90 [Cary Fowler and Pat Mooney, 1990. Senior Officer at the UN Food and Agriculture Organization and Staff Member at the Rural Advancement Fund International. Shattering: Food, Politics, and the Loss of Genetic Diversity]

But are we ready for the staggering responsibility of guiding future evolution on earth? The first rule of successful tinkering is to save all the pieces; yet in agriculture we are discarding the pieces before we even know their value or their role. We are burning books that we have not yet read. We are like the English monarch who directed that straight trees be destroyed but curved boughs be encouraged, because they were better for constructing hulls for sailing ships his country would need. We, too, must prepare for the future- but we must bear in mind that we do not know what the future will bring. We do not presume to know, for example, how the human race will deal with the ultimate demise of the petrochemical age. We know we will have to, because the supply of nonrenewable resources is finite. Our generation may not have to face that problem, but some future generation will. Sensing that the dislocations and adjustments will be tremendous and painful some simply choose to deny their inevitability. Try telling a plant breeder that we will not always have oil based fertilizers and pesticides to use on our heavily dependent (even addicted) crops, and, likely as not, the response will be, “Yes we will.” We have to. How else can we feed the world's population?" We do not know the answer to that question. But we do insist that, no matter how pressing the human need for inexhaustible supply of oil-based agricultural inputs might be, simple logic and the events of the last decade tell us that we cannot depend on them forever. In the long history of agriculture, chemical dependent farming may well come to be seen as a passing fad. While praying for some as yet undreamed of solution to the problem of producing great quantities of good without great quantities of nutrients, we might do well at least to save those crop resources adapted to limited input agriculture- the varieties that have evolved and survived for thousand of years without post- World War II chemicals. These traditional varieties may not be a total solution. But in a world with less and less oil, modem varieties addicted to oil will not be a solution either. To suggest otherwise is a cruel hoax. Future generations will deal with these problems either with or without the crop genetic resources that exist today. We assert it is our moral and evolutionary responsibility to see that future generations have these resources to use or not, as they deem appropriate.

## Environment

### Amazon Deforestation

#### Also forces small farmers off their land, driving deforestation of the Amazon

Tocatins 9 [(Alan Fernandes Tocantins, Graduated in Business Administration from the University of Rio Verde (1996) and the Environmental Management Birkbeck College, University of London (2008). Master in Geographic Information Science by Birkbeck College, University of London (2010) with emphasis on Geographic Information System and Remote Sensing. Professor at the University of Cuiabá and Ibero American College - Cuiabá – MT) “The social and environmental impacts of industrial agriculture in the Legal Amazon” 14th Symposium on Remote Sensing, p 159-164] AT

The spatial patterns of deforestation have changed over the last decades and so have the rate in which they occur. However, current deforestation has concentrated in what has been defined as the Arc of Deforestation (Fig 1), where clearing of forests has been stimulated by land speculation, and more recently, increased by the production of export commodities such as soybeans and beef. Brazil is one of the few countries in the world to possess large areas of unoccupied land that could be farmed [4], making it the world’s last agricultural frontier. With the growing participation in the globalized world market, the expansion of these agricultural frontiers has become inevitable. This paper attempts to present a review of recent literature of the main drives of deforestation in the Amazon, focusing on the advance of cultivation of soybeans and transport infrastructure in the region. The expansion of cattle ranching into the Amazon and, more recently, soybean production in the agriculture frontier has not contributed to reduce social and economic inequality in the population. The consolidation of large farms and ranches means that small farmers do not stand a chance in the share on the appropriation of the increasing values of these lands [15]. Their options are either to try a new life in rapidly growing urban centres throughout the Amazon, or invade new lands and prepare them for more profitable investments [2]. The present study focus on the idea that, in contrast to other land-use conversions in recent years (e.g. land speculation, tenure or domestic markets), one of the main factors indirectly driving deforestation today is the advance of soybeans into the agriculture frontier of the Amazon, which has been regulated by the international market. Soybean planters might not cut the forest themselves, but they increased the pressure on small farmers to sell their land and move to frontiers areas and clear more [14]. 3. Impacts of large scale agriculture: the case of Mato Grosso Helped by government’s rural subsidies, transport facilitations for the outputs and intensive agricultural research to overcome low fertility of tropical soils [17], the agricultural production expanded from the south towards the vast Brazilian Cerrado. It is estimated that out of the 86 million tons of soy produced in Brazil (harvest 2006/2007, EMBRAPA [8]) over 15 per cent comes from the crop barren soils of the Legal Amazon region [9], with the state of Mato Grosso as the biggest producer in Brazil. However, in order to strengthen their activities, 161 large-scale farmers have induced smaller farmers to sell their land and move to new frontiers deeper into the forest and clear more land; a dynamic that has also led to the displacement of small farmers to urban areas, worsening the social problems, such as unemployment, crime and segregation [38]. Land use in Mato Grosso has been characterized by a dominant pattern of forest conversion that started with small scale exploration for timber, mining and subsistence agriculture [17]. The consolidation of land use into large-scale ranching soon followed, and although cropland expansion has occurred mostly in areas already cleared in previous activities, this new configuration of land use in Mato Grosso has had important effects both socially and environmentally in the region. At the southern tip of the Legal Amazon, deforestation has intensified (Fig. 3) as a result of the arrival of small farmers, displaced from their land now occupied by large-scale croplands, and the dominance of cattle ranching. Although extensive cropland does not contribute directly to most deforestation itself, it seems to be the driving force behind the process. The maps presented on Figure 4 (below) shows the reconfiguration of agriculture and ranching in Mato Grosso over time, presented separately at a municipality level. The production of soybean has intensified and concentrated particularly in the central and southern parts of the state, as a result of consolidation of large agricultural enterprises. However, the map on bottom left shows how soybean production has intensified in those regions. As a consequence, cattle ranching, which was concentrated at southern Mato Grosso in 1990 (top right map) has rapidly expanded to the Amazon frontier in the north (bottom right map). 3.1 Case study: Alta Floresta Located at the border with Pará state, 830 km north from Cuiabá (capital of Mato Grosso state), Alta Floresta is situated at 09˚52’ S; 56˚06’ W, with 8,947 km² [9]. Out of the 36 municipalities that most contributed to the deforestation in the Amazon region in 2007, 19 of them are in the Mato Grosso state, including Alta Floresta [5 and 12]. INPE [5] estimates that 38 per cent of total Amazonia deforestation over 1999-2003 occurred in Mato Grosso, and that 5.6 per cent of remaining Mato Grosso cerrado were deforested between 1998 and 2002 [15]. Logging and deforestation in Alta Floresta, as a by-product of ranching, have intensified as a result of the dominance of technically advanced and highly mechanized cultivation of soybeans that today occupies 5,125 million hectares [8] of land use in other parts of Mato Grosso – around 25 per cent of the Brazil’s total soy planted area [8]. Conservation efforts, such as the creation of the State Parks Cristalino I and II proved to be an efficient way to protect the remaining fragmented forests. But even areas of conservation have been overwhelmed by the destructive trends of ranching-agriculture [18]. The reduction is a setback in the regional conservation strategy, built on the conventional emphasis on parks, indigenous or extractivist reserves. Under funded and understaffed conservation areas also suffer from weak implementation of environmental legislation and law enforcement. Moreover, in Brazil it is not unusual for illegal deforestation to involve public servants, such as environmental agents in massive corruption schemes with timber companies or traders [15]. 5. Conclusion This study has focused in both expansion of the agriculture frontier as one of the main ultimate factors contributing to the current rates of deforestation in the Legal Amazon. The state of Mato Grosso, and more specifically the region of Alta Floresta, has been chosen as areas of interests, because of factors that make this region on of the most dynamic agricultural frontiers in the Amazon. These factors include a whole reconfiguration of the agriculture in Mato Grosso, which has led to the movement of both urban and rural populations to the Amazon frontier. The social, economic and environmental effects this movement has brought about have been analysed combining social-economic census, satellite based and spatially referenced data, as well as extensive review of the literature available. I found that, even though the expansion of large scale agriculture is not directly a factor of deforestation itself, it has become an important additional actor in the process, for inducing smaller farmers into new forested agricultural frontiers.

#### Habitat loss in the Amazon causes extinction.

Howard 11 [(lead of Ecosystem Service and Poverty Alleviation Project, Wageningen Univ. Department of Social Sciences Faculty) “Tipping Points and Biodiversity Change: Consequences for Human Wellbeing and Challenges for Science and Policy” Draft Prepared for the Kavli Seminar“Addressing Global Tipping Points”13-15 March 2011] AT

In the 20 th century, we became aware that the fate of biodiversity and the fate of humans are intimately interconnected. Before this, only some religions (and a few philosophers) predicted the end of life onEarth or human extinction through different versions of Armageddon, which was generally caused by thedivine consequences of wayward human behaviour. Darwin’s theory of evolution provided the means to un-derstand continual species extinctions, and scientists began to unearth the evidence of previous mass extinc-tions. However, the idea that extinction might extend to the human species was not taken up until the 20 th century, when it was argued that all species invariably become extinct (Raup 1991). Scientists came to un-derstand that the human species could disappear through catastrophic natural events, much as the dinosaursdisappeared, as a result of bolide impacts or large-scale volcanism. A secular concept of self-annihilationemerged less than 50 years ago with the spectre of global nuclear holocaust, which would also render muchother life on Earth unviable (see e.g. Robock et al. 2007), and where the life that remained would be distinct-ly antithetical to humans. Many now argue that there are other catastrophic threats to the human species,some of which threaten life on Earth more generally (Rees 2003, Posner 2004, Bostrom & Cirkovic 2008,Al-Rodhan 2009). We can only speculate whether the sixth mass extinction of species that appears to be un-derway has implications for the continued evolution of the human species, but we do know that it is the syn-ergies and feedbacks between global environmental change and biodiversity change, combined with mala-daptive human responses to that change (e.g. global nuclear conflict; unintended effects of technological re-sponses), that leads to the most catastrophic scenarios.Critical questions that arise when considering biodiversity change, the threats that it poses to humanwellbeing, and the challenges that it presents for mitigation and human adaptation, are whether there are crit-ical thresholds or ‘tipping points’ related to biodiversity change, and whether such tipping points can lead or contribute, directly or indirectly to global tipping points or whether they ‘only’ have implications at local or regional scales. If there are such tipping points, what types of implications do they have for human wellbe-ing? For whom, where, and when? Further, can such tipping points be avoided, and are we prepared to dealwith (adapt to) them if they cannot?With biodiversity change, there are a number of vulnerabilities to which the majority of the globe’s human population are exposed not only because they are impacted by this change at local level, but also because even local changes can have global repercussions due of global interdependencies. One is the rapidemergence and transmission of new infectious diseases and pests that both threaten plants and animals (and thus the humans that depend upon them), as well as humans directly (e.g. Chivian & Bernstein 2008, Pong-siri et al. 2009, Keesing et al. 2010, Sharma 2010). A second is invasive species, where species disperse be-yond their ‘normal’ range, invade many different regions on different continents, affecting the invaded eco-systems in highly unpredictable ways (e.g. GISP n.d., Walther et al. 2009, Perrings et al. 2010). Both maycontribute strongly to a third such vulnerability, which is addressed here, presented by tipping points that may emerge at regional scale, such as the loss of the Amazon rainforest or the collapse of coral reefs, that can have extra-regional or even global repercussions not only due to the loss of species and ecosystems, but as well due to the loss of some of the ecosystem services that these provide e.g. as CO 2 sinks, which creates synergies with phenomena such as climate change and ocean acidification. Finally, the fourth vulnerability is posed by human maladaptation to any of these dynamics, where maladaptation can exacerbate biodiversity change and can lead to other negative effects for human welfare and ecosystems. Conflict over dwindling biological resources and ecosystem services is likely to become pervasive, and conflict over the understand-ing of the causes and effects of such change are likely to be just as serious. The global security implications of climate change are of great concern and are being assessed (e.g. GACGC 2007) but, to our knowledge, no such assessment exists for biodiversity change. Many of the global, regional, and national institutions that inthe past have evolved to manage human-biodiversity relations have so far been shown to be relatively inef-fective in stemming biodiversity loss (see e.g. CBD 2010) and thus they are likely to be even more ineffec-tive in dealing with surprises or with the large-scale repercussions of the loss of benefits, e.g. of food, andnew institutions will have to emerge if such threats are not to translate into local, regional, and even global,catastrophe. I argue that to successfully adapt to tipping points requires major changes in values, priorities, andinstitutions, particularly economic institutions: some of this change may be forthcoming but much is unlikelyto change quickly or profoundly enough to avoid such tipping points. A first step is to recognise the implica-tions of biodiversity change and potential tipping points for human wellbeing, which is currently impeded bycultural, cognitive and political barriers. A second is to prepare for such change, and a third is to prepare po-tential responses. II. Biodiversity Change and Tipping PointsA. Types, magnitudes and drivers of biodiversity change Aside from numerous potential sources of global catastrophe that could have such implications for life onEarth, we also find ourselves in a period when rates of species extinctions are estimated at 50-500 times background, which is the highest rate in the past 65 million years. The effects of ongoing rapid decline of biomes and homogenisation of biotas have been summarised as:changes in species geographic ranges, genetic risks of extinction, genetic assimilation, naturalselection, mutation rates, the shortening of food chains, the increase in nutrient-enriched nich-es permitting the ascendancy of microbes, and the differential survival of ecological general-ists. Rates of evolutionary processes will change in different groups, and speciation in thelarger vertebrates is essentially over…Whether the biota will continue to provide the dependa- ble ecological services humans take for granted is less clear…Our inability to make clearer predictions about the future of evolution has serious consequences for both biodiversity andhumanity (Woodruff 2001: 5471).The consequences for biodiversity and humanity depend in part on the timescale in reference. Some scien-tists argue that the Earth’s sixth extinction has already arrived, where an estimated loss of over 75% of spe-cies can be expected, possibly within 250 to 500 years (Barnosky et al. 2011), although others highlight thefact that projections of species extinction rates are controversial (Pereira et al. 2010). A mass extinction hardly bodes well for humans given the changes in the biosphere, in biomes and ecosystems, the associated pestand disease outbreaks, etc. that are associated with the different drivers of biodiversity change and the possi- ble critical thresholds or tipping points discussed below and in other papers presented here. Thus, the impli-cations of what is laid out below are magnified many fold and their effects become increasingly synergisticover time – 500 years is a very short period when we consider that Homininae appeared 8 million years ago, Homo sapiens 500,000 years ago, and modern humans 200,000 years ago – effectively, it constitutes only.25% of modern human history. Were humans to have a council of elders to deliberate the impact of our ac-tivities on future generations, it would certainly be extraordinarily alarmed and calling for radical transfor-mations as, indeed, are many scientists today.What is extraordinary about this possible 6 th extinction of species is that, since it is human-induced,it is not inevitable and depends, for example, on rates of climate and land-use change (Pereira et al. 2010).For the first time in the Earth’s history, a species is actually in a position to change the course of evolutionwrit large (Western 2001). This is reflected in the range of projected changes in biodiversity, which is very broad both because ‘there are major opportunities to intervene through better policies, but also because of large uncertainties in projections’ (Pereira et al. 2010: 1496). The possibilities and constraints to doing so arediscussed below and in other papers. Many scientists consider that the probability that we will change thecourse that evolution is currently on is low or very low without radical and immediate transformations invalues, knowledge, behaviour, markets, and governance. 3The causes of species extinctions and related change in biodiversity and ecosystem services can becharacterised as ‘synergistic stressors’ – climatic change coupled with ‘abnormally high ecological stressors’and ‘unusual interactions’ (e.g. between human-induced climate change, habitat fragmentation, pollution,over-harvesting, invasive species, pathogens and, some would add, the ‘expanding human biomass’ (Bar-nosky et al. 2011) although one could just as easilyadd ‘the expanding livestock biomass’ or ‘expanding biofuels production’)(Steinfeld et al. 2010, Wise et al.2009). Beyond this, humans have had a massive im- pact on the productivity, composition, and diversity of terrestrial ecosystems by changing the rates of supplyof major nutrients (nitrogen, phosphorus, and atmos- pheric CO 2 ), changing regional fire frequencies, [and]relaxing biogeographic barriers to species dispersal’(Tilman & Lehman 2001: 5433).Many human-dominated ecosystems are char-acterised by high natural resource extraction, shortfood chains, food web simplification, habitat and land-scape homogeneity, heavy use of petrochemicals andfossil fuels, convergent soil characteristics, modifiedhydrological cycles, reduced biotic and physical dis-turbance regimes, and global mobility of people, goodsand services (Western 2001) which give rise to theeffects in Box 1. In sum, humans are currently ‘appro- priating more than a third of all terrestrial primary production and, in so doing, have simplified or de-stroyed large portions of some types of ecosys-tems…many human environmental impacts are pro- jected to be two to three times stronger within 50years’ (Tilman & Lehman 2001: 5433). Notwithstand-ing their global significance, and not all human-dominated ecosystems are the same, not all humansare having the same impacts on biodiversity and eco-systems, which will also be taken up again below.According to the Millennium Ecosystem As-sessment (MEA) (Mace et al. 2005), at present habitatchange and fragmentation are the most important drivers of species extinctions, whereas invasive species andover-exploitation are the next most common, and disease, climate change, and pollution follow these in im- portance. Until recently, scientists generally agreed that species extinctions are principally due to habitat change and fragmentation, where it is human-induced land use changes such as agricultural expansion and especially tropical deforestation that have been the most important drivers, particularly since species richness is highest in tropical forests. As a result, most conservation activity has focused on reducing habitat loss andits impacts (Lewis 2006). Nevertheless, the major drivers of change in biodiversity vary per ecosystem type(Mace et al. 2005). For example, in tropical forests, habitat change has had a very high impact on biodiversi-ty over the past 100 years, followed by over-exploitation, whereas climate change, invasive species, and pol-lution have played minor roles. This is not the case in boreal forests, where nitrogen and phosphorus pollu-tion have been the major drivers.Since about the 1990s, however, there has been growing evidence that climate change is both interact-ing with these drivers and increasingly as a driver of biodiversity change in and of itself, to the point wheremost experts now agree that climate change will surpass habitat loss and fragmentation as the principle driv-er of species extinctions (Hannah et al. 2005, Thomas 2004, van Vuuren 2006). Climate change is not onlyincreasingly driving species extinctions: it also affects species composition in any given ecosystem throughchanges in range (distribution) of species, changes in timing of reproductions, and changes in the length of the growing season for plants (CBD 2007 and below). Today, scientists consider that it is the synergy be-tween habitat change and fragmentation and climate change that is the most threatening to biodiversity, giv-en that habitat loss and fragmentation can prohibit species from migrating and colonising new areas in re-sponse to climate change (Lovejoy & Hannah 2005).

### Dead Zones

#### Industrial Farming causes runoff and deadzones

Wagner 9 [(Cynthia, Editor of The Futurist magazine, explores the technological, scientific, environmental, social, and policy trends shaping our collective future) “Oceans’ Dead Zones on the Rise” World Future Society, Nov-Dec 2009] AT

A predicted global increase in food consumption is likely to create an environmental crisis where it’s least expected. Studies link a rise in industrial food production to an increase in the already large number of so-called “dead zones” in coastal waters. Dead zones are so named because they lack sufficient oxygen to support fish, crustaceans, and other forms of marine life. The World Resources Institute (WRI) recently labeled them a “rapidly growing environmental crisis.” More than 400 have been identified worldwide, and researchers have spotted one in the Gulf of Mexico near the mouth of the Mississippi River that’s roughly the size of a small country — 7,500 square miles and growing. A major contributor to the problem is industrial agriculture, according to WRI. Too much animal manure and crop fertilizer is entering into and contaminating freshwater and coastal ecosystems. The nitrogen and phosphorous they contain overfertilize the algae and phytoplankton that grow on or near the surface of the water, causing the plants to grow at an unnaturally high rate. The unusually large amounts of algae inevitably die and sink to the bottom of the gulf. As the plant matter decomposes, it exhausts much of the oxygen from the surrounding water. This process is known as eutrophication. Since much of the manure from factory farms runs off into freshwater streams before being transported out to sea, the problem it isn’t limited to coastal waters. Eutrophication may be the primary reason for freshwater problems in the United States, WRI claims. And eutrophication doesn’t just impact the environment — it affects human health and economic systems as well. Global consumption of meat is expected to increase by more than 50% within the next 25 years. WRI reports that a surge in livestock production in particular would have serious repercussions for developing countries that lack strong, enforceable environmental regulations.

#### Ocean degradation causes extinction

Craig 3 [Robin Craig, Indiana University, Robin Kundis, Winter, 34 McGeorge L. Rev. 155, p. 264-266]

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far rarely been raised in political debates. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. More generally, "ocean ecosystems play a major role in the global geochemical cycling of all the elements that represent the basic building blocks of living organisms, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." In a very real and direct sense, therefore, human degradation of marine ecosystems impairs the planet's ability to support life. Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity, "indicating that **more diverse ecosystems are more stable**." Coral reef ecosystems are particularly dependent on their biodiversity. Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is higher on coral reefs than in any other marine environment. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire lawmakers and policymakers to admit that most of the time we really do not know what we are doing to the sea and hence should be preserving marine wilderness whenever we can - especially when the United States has within its territory relatively pristine marine ecosystems that may be unique in the world. We may not know much about the sea, but we do know this much: if we kill the ocean we kill ourselves, and we will take most of the biosphere with us**.** The Black Sea is almost dead, its once-complex and productive ecosystem almost entirely replaced by a monoculture of comb jellies, "starving out fish and dolphins, emptying fishermen's nets, and converting the web of life into brainless, wraith-like blobs of jelly." More importantly, the Black Sea is not necessarily unique. The Black Sea is a microcosm of what is happening to the ocean systems at large. The stresses piled up: overfishing, oil spills, industrial discharges, nutrient pollution, wetlands destruction, the introduction of an alien species. The sea weakened, slowly at first, then collapsed with shocking suddenness. The lessons of this tragedy should not be lost to the rest of us, because much of what happened here is being repeated all over the world. The ecological stresses imposed on the Black Sea were not unique to communism. Nor, sadly, was the failure of governments to respond to the emerging crisis. Oxygen-starved "dead zones" appear with increasing frequency off the coasts of major cities and major rivers, forcing marine animals to flee and killing all that cannot. Ethics as well as enlightened self-interest thus suggest that the United States should protect fully-functioning marine ecosystems wherever possible - even if a few fishers go out of business as a result.

### Bees

#### Only transition to sustainable agriculture ensures healthy bee populations

PANNA 8, Summer 2008. Pesticide Action Network North America. “Vanishing Bees: Victims of Industrial Agriculture,” <http://www.panna.org/mag/summer2008/news/vanishing-bees>.

Over the past 30 years, honeybee populations have plummeted 50%. Many factors are contributing to the decline—including systemic pesticides, varroa mites and Nosema Disease—**but the** greatest threat to the bee’ssurvival **may be** the **industrial agriculture** model **that promotes pesticides and monocropping**. When we read about “colony collapse disorder,” we’re hearing about the problems confronting commercial bee-brokers. Natural pollination by wild, resident honeybees and other beneficial insects was the norm only 30 years ago. But natural pollination is no longer possible where traditional habitats have been replaced by weedless, laser-leveled acres planted to a single crop. In California’s Central Valley, vast industrial spreads—artificially maintained by synthetic nitrogen inputs, herbicides and insecticides—are no longer hospitable to native bees, wasps, butterflies or other wildlife. In May, following the mass deaths of bees and other insects, Germany’s Office for Consumer Protection and Food Safety (BVL) suspended use of eight pesticides after it was found that the bees were killed by clothianidin, the active ingredient in Bayer’s Eldado and Poncho pesticides. BVL also suspended use of four of Bayer’s imidacloprid-based pesticides: Antarc, Chinook, Faibel and Gaucho. Products containing neonicotinoids like imidacloprid and clothianidin account for much of Bayer’s annual agrochemical profits. France’s Comité Scientifique et Technique has declared the chemical a “significant risk” to bees. As wild pollinators were increasingly forced off the land, Big Ag turned to “domesticated” bees. When up to 90% of U.S. commercial bee colonies went into a tailspin last winter, desperate growers paid premium prices to air-freight one billion “guest worker” bees from Australia to pollinate U.S. fields and orchards. Commercial honeybees are the insect world’s equivalent of migrant labor. Trucked thousands of miles from one field to another, these bees are forbidden to forage on their own. They are only released to service a particular crop—apples, peaches, oranges, melons—and when they do, they are inevitably exposed to a range of chemical residues. The U.S. Department of Agriculture has identified 58 pesticides that are “highly toxic” to bees, including aldicarb, diazinon and malathion. It might be more accurate to call commercial colonies “prison colonies.” Trucked from state to state, these captive bees are force-fed a diet of high fructose corn syrup and soy protein—a poor substitute for pollen. This cheap, high-fiber, low-protein, junk-food bee feed is derived from genetically modified corn that has been engineered to contain Bt—a bacterial insecticide. And now more of the honeybees’ native “homeland” in the prairies of the Midwest—historic vistas of pollen-rich asters and goldenrods—are set to be plowed under and monocropped to make corn ethanol to fuel America’s automobiles. There is an alternative. “This country has 4,500 species of native insects that are potential pollinators,” Gina Covina writes in Terrain magazine. “On the East Coast, where farms are much smaller, more diverse, and broken up by uncultivated land, native insects account for up to 90% of crop pollination.” In Costa Rica, studies have shown coffee yields increase 20% when crops are grown within a kilometer of a forest. In Canada, canola yields increased on farms that preserved 30% of the land as natural habitat. “Fortunately,” Covina notes, “insects are quick to recolonize formerly dead areas—hedgerows, windbreaks, wetlands, woodlots.” But the survival of **Earth’s** bees will require a **fundamental** transition from **the** industrial agriculture **model** to the biodiverse ecological model.

#### Bees key to bioD and agriculture

Shah 11 [(Anup, founder of Global Issues) “Why Is Biodiversity Important? Who Cares?” Global Issues April 6] AT

Bees provide enormous benefits for humankind as another example. As reported by CNN (May 5, 2000), “One third of all our food—fruits and vegetables—would not exist without pollinators visiting flowers. But honeybees, the primary species that fertilizes food-producing plants, have suffered dramatic declines in recent years, mostly from afflictions introduced by humans.” As German bee expert Professor Joergen Tautz from Wurzburg University adds: Bees are vital to bio diversity. There are 130,000 plants for example for which bees are essential to pollination, from melons to pumpkins, raspberries and all kind of fruit trees — as well as animal fodder — like clover. Bees are more important than poultry in terms of human nutrition. — Joergen Tautz interviewed by Michael Leidig, Honey bees in US facing extinction, The Telegraph, March 14, 2007 Researchers are finding reasons for the massive decline hard to pinpoint, but suspect a combination of various diseases, environmental pollution, environmental degradation (leading to less diversity for bees to feed from, for example) and farming practices (such as pesticides, large monoculture cropping, etc). The link and dependency between plants, bees, and human agriculture is so crucial, the two scientists writing up years of research into the problem summarized with this warning: Humankind needs to act quickly to ensure that the ancient pact between flowers and pollinators stays intact, to safeguard our food supply and to protect our environment for generations to come. These efforts will ensure that bees continue to provide pollination and that our diets remain rich in the fruits and vegetables we now take for granted. — Diana Cox-Foster and Dennis van Engelsdorp, Solving the Mystery of the Vanishing Bees, Scientific American, April 2009

#### The impact is extinction

Herrmann 11 (Lynn Herrmann, writer at Digital Journal, “Report: World Bee Decline Signals ‘Sixth Major Extinction,’” Digital Journal, March 11, 2011, <http://digitaljournal.com/article/304525)>

Geneva - A new report on honey bee and pollinator decline indicates a “sixth major extinction” of biological diversity is currently underway, caused by habitat loss, pollution, pest invasion, and disease, leading to ecosystem havoc vital to human livelihood. The United Nations Environment Program has released a study on a collapse of the world’s honey bee colonies and presents scientific data and analysis regarding bee decline, including wild and controlled bee populations. The report, Global Honey Bee Colony Disorders and Other Threats to Insect Pollinators (pdf), includes authors who are world-leading honey bee experts, and issues an urgent warning over bee decline. Bees pollinate over 70 percent of the 100 crop species that provide 90 percent of global food supplies. There are 20,000 known bee species around the world with the honey bee being the most common. Colony decline is most prevalent in North America and has been observed in Europe since 1965. However, the report shows that since 1998, colony weakening and mortality has occurred particulary in France, Belgium, the UK, Germany, Switzerland, the Netherlands, Spain and Italy. “The way humanity manages or mismanages its nature-based assets, including pollinators, will in part define our collective future in the 21st century,” said Achim Steiner, UN Undersecretary-General and UNEP’s Executive Director, in a news release. “Human beings have fabricated the illusion that in the 21st century they have the technological prowess to be independent of nature. Bees underline the reality that we are more, not less, dependent on nature’s services in a world of close to seven billion people,” Steiner added. Honey bee colony loss in North America since 2004 has resulted in fewer managed pollinators than any other time during the last five decades. The report states that many vegetables, fruits, nuts, legumes and seed crops are dependent on pollination, with that service being provided by wild, free-living organisms, mainly bees, which are the predominant and most economical group of pollinators in most regions.

## Food Production

### Amazing Scenario

#### And the industrial model causes massive hunger and can’t meet the needs of population growth – causes global famine and food wars

Headley 13 [(Joshua, founder of Deep Green Resistance environmental movement) “BREAKDOWN: Industrial Agriculture” Deep Green Resistance May 12 2013] AT

In no other industry today is it more obvious to see the culmination of affects of social, political, economic, and ecological instability than in the global production of food. As a defining characteristic of civilization itself, it is no wonder why scientists today are closely monitoring the industrial agricultural system and its ability (or lack thereof) to meet the demands of an expanding global population. Amidst soil degradation, resource depletion, rising global temperatures, severe climate disruptions such as floods and droughts, ocean acidification, rapidly decreasing biodiversity, and the threat of irreversible climatic change, food production is perhaps more vulnerable today than ever in our history. Currently, as many as 2 billion people are estimated to be living in hunger – but that number is set to dramatically escalate, creating a reality in which massive starvation, on an inconceivable scale, is inevitable. With these converging crises, we can readily see within agriculture and food production that our global industrial civilization is experiencing a decline in complexity that it cannot adequately remediate, thus increasing our vulnerability to collapse. Industrial agriculture has reached the point of declining marginal returns – there may be years of fluctuation in global food production but we are unlikely to ever reach peak levels again in the foreseeable future. While often articulated that technological innovation could present near-term solutions, advocates of this thought tend to forget almost completely the various contributing factors to declining returns that cannot be resolved in such a manner. There is also much evidence, within agriculture’s own history, that a given technology that has the potential to increase yields and production (such as the advent of the plow or discovery of oil) tends to, over time, actually reduce that potential and significantly escalate the problem. Peak Soil A largely overlooked problem is soil fertility. [1] A civilization dependent on agriculture can only “sustain” itself and “progress,” for as long as the landbase and soil on which it depends can continue to thrive. The landscape of the world today should act as a blatant reminder of this fact. What comes to mind when you think of Iraq? Cedar forests so thick that sunlight never touches the ground? “The Fertile Crescent,” as this region is also known, is the cradle of civilization and if we take a look at it today we can quickly deduce that overexploitation of the land and soil is inherent to this way of life. The Sahara Desert also serves as a pressing example – a region once used by the Roman Empire for food cultivation and production. But this problem has not escaped our modern industrial civilization either, even despite some technological advances that have been successful at concealing it. The only thing we have genuinely been “successful” at is postponing the inevitable. Currently, industrial agriculture depletes the soil about a millimeter per year, which is ten times greater than the rate of soil formation. Over the last century, we have solved this problem by increasing the amount of land under cultivation and by the use of fertilizers, pesticides, and crop varieties. Industrial civilization has expanded so greatly, however, that we currently already use most of the world’s arable land for agriculture. To solve the problems of peak soil today, as we have previously, would require doubling the land currently used for cultivation at the cost of some of the worlds last remaining forests and grasslands – most notably the Amazon and the Sahel. Not only is this option impractical, given the current state of the climate, it is wholly insane. Another problem we face today is that more than a half-century of reliance on fertilizers and pesticides has severely reduced the level of organic matter in the soil. An advance in chemical fertilizers and/or genetic engineering of crops, while promising boosted yields in the near-term, will only further delay the problem while at the same time possibly introducing even greater health risks and other unforeseen consequences. Decreasing Yields & Reserve Stocks According to an Earth Policy Institute report in January, global grain harvests and stocks fell dangerously low in 2012 with total grain production down 75 million tons from the record year before. [2] Most of this decrease in production occurred as a result of the devastating drought that affected nearly every major agricultural region in the world. The United States – the largest producer of corn (the world’s largest crop) – has yet to fully recover from the drought last year and this is a cause for major concern. Overall, global grain consumption last year exceeded global production requiring a large dependence on the world’s diminishing reserve stocks. And this isn’t the first time it has happened – 8 out of the last 13 years have seen consumption exceed production. In an escalating ecological crisis this is likely to be the new “normal.” This fact, in itself, is a strong indication that industrial civilization is dangerously vulnerable to collapse. The issue here is two-fold: resource scarcity (industrial agriculture requires fossil fuels in every step of the process), soil degradation, and climate disruptions (droughts, floods, etc.) are severely reducing the yields of industrial agriculture; at the same time (and precisely because of those facts), we are becoming increasingly reliant on carryover reserve stocks of grains to meet current demands thus creating a situation in which we have little to no capacity to rebuild those stocks. As Joseph Tainter describes in The Collapse of Complex Societies, a society becomes vulnerable to collapse when investment in complexity begins to yield a declining marginal return. Stress and perturbation are common (and constant) features of all complex societies and they are precisely organized at high levels of complexity in order to deal with those problems. However, major, unexpected stress surges (which do occur given enough time) require the society to have some kind of net reserve, such as excess productive capacities or hoarded surpluses – without such a reserve, massive perturbations cannot be accommodated. He continues: “Excess productive capacity will at some point be used up, and accumulated surpluses allocated to current operating needs. There is, then, little or no surplus with which to counter major adversities. Unexpected stress surges must be dealt with out of the current operating budget, often ineffectually, and always to the detriment of the system as a whole. Even if the stress is successfully met, the society is weakened in the process, and made even more vulnerable to the next crisis. Once a complex society develops the vulnerabilities of declining marginal returns, collapse may merely require sufficient passage of time to render probable the occurrence of an insurmountable calamity.” [3] Current global reserve stocks of grains stand at approximately 423 million tons, enough to cover 68 days of consumption. As population and consumption levels continue to rise while productive capacities fall, we will be more and more dependent on these shrinking reserves making our ability to address future stresses to the system significantly low. Disappearance of the Arctic Sea Ice One such “insurmountable calamity,” may be quickly on the horizon. This week, senior US government officials were briefed at the White House on the danger of an ice-free Arctic in the summer within two years. One of the leading scientists advising the officials is marine scientist Professor Carlos Duante, who warned in early April: “The Arctic situation is snowballing: dangerous changes in the Arctic derived from accumulated anthropogenic green house gases lead to more activities conducive to further greenhouse gas emissions. This situation has the momentum of a runaway train.” [4] Over the last few years, the excessive melting occurring in the Arctic region due to rising global temperatures has altered the jet stream over North America, Europe, and Russia leading to the very unprecedented heat waves and droughts responsible for most of the declining returns in agricultural production in recent years. As the warming and melting continue, these extreme weather events will exponentially get worse. In addition, the melting of the sea ice will significantly raise sea level with the potential to displace more than 400 million people. The UK-based Arctic Methane Emergency Group recently released a public statement also indicating: “The weather extremes from last year are causing real problems for farmers, not only in the UK, but in the US and many grain-producing countries. World food production can be expected to decline, with mass starvation inevitable. The price of food will rise inexorably, producing global unrest and making food security even more of an issue.” [5] Social, Political, and Economic Instability No civilization can avoid collapse if it fails to feed its population, largely because continued pressures on the system will result in the disintegration of central control as global conflicts arise over scarce necessities. [6] This process can occur rapidly and/or through a gradual breakdown. A likely scenario of rapid collapse would be the breakout of a small regional nuclear war – such as between Pakistan and India – which would create a “nuclear winter” with massive global consequences. If that could be avoided, then the threat of collapse will likely be more gradual through the continued decrease of marginal returns on food and essential services. As these crises continue to increase in frequency and severity, their convergences will usher in a period of prolonged global unrest. [7] This was directly seen as a result of the 2007-08 grain crisis in which many countries restricted exports, prices skyrocketed, and food riots broke out in dozens of countries. Many of those countries were located within the Middle East and are credited as the fundamental circumstances that gave way to the Arab Spring in 2011. This year the food price index is currently at 210 – a level believed to be the threshold beyond which civil unrest is probable. Further, the UN’s Food and Agriculture Organization is already reporting record high prices for dairy, meat, sugar and cereals and also warns – due to the reduced grain stocks from last year’s droughts – that prices can be expected to increase later this year as well. Another factor driving up the costs of food is the price of oil. Because the entire industrial agriculture process requires the use of fossil fuels, the high price of oil results in a corresponding rise in the price of food. The future of oil production and whether we have reached “peak oil” may still be a matter of contention for some, but the increasing reliance on extreme energy processes (tar sands, hydraulic fracturing, mountaintop removal, etc.) is a blatant indication that the days of cheap petroleum are over. This implies that costs for energy extraction, and therefore the price of oil and food, will only continue to rise dramatically in the foreseeable future. As the struggle for resources and security escalates, governments around the world will rely more heavily upon totalitarian forms of control and reinforcement of order, especially as civil unrest becomes more common and outside threats with other countries intensify. However, this is also likely to be matched by an increase in resistance to the demands of the socio-political-economic hierarchies. Emerging Alternatives As system disruptions continue to occur and food and other essential resources become scarcer, remaining populations will have to become locally self-sufficient to a degree not seen for several generations. The need for restructuring the way in which our communities have access to food and water is greater now than perhaps ever before – and there are more than a few examples being built around the world right now. A few weeks ago, I had the privilege of hearing a presentation at the Ecosocialist Conference in NYC on precisely these alternatives. Speaking on a panel entitled “Agriculture and Food: Sustainable or Profitable?” was David Barkin, a Distinguished Professor at the Universidad Autonoma Metropolitana in Mexico City, who has been collaborating with thousands of communities in Mexico and Latin America involved in constructing post-capitalist societies. [8] In his presentation he spoke greatly about local groups – comprising of 30,000-50,000 people each, together being more than 130 million people – throughout Mexico and Latin America that are rebuilding their societies based on five principles that were written by the communities themselves and then systematized. Self-management; through a process of participatory democracy Solidarity; through rejecting the notion of wage-labor and re-organizing the entire work process Self-sufficiency; which includes contacts and exchanges between many organizations so that you are not limited to the resource or climate-base of a single community but a development of trade networks Diversification Sustainable regional resource management; most communities in Mexico and Latin American define a region based on the natural definition of watersheds, although that may not be the most applicable natural definition in other parts of the world He also spoke of groups such as the EZLN as examples of groups building alternative models – not models that are working at a super-structural level to change government policy, but models that give power and control directly to the community for the purposes of self-sufficiency and sustainability. In Peru, Bolivia, and Ecuador there is a phrase “El Buen Vivir” or “Sumak Kawsay,” – a cosmology that is said to come from indigenous cultures – that is actually informing how communities are rebuilding. It is proposed to promote sustainable relationships with nature and for communities to be less consumerist. In addition to radically rebuilding our communities so that they exist not only wholly independent from industrial agriculture but also in harmony with the natural world, we need to build a greater resistance movement against industrial infrastructure that continues to threaten the very possibility of people all over the world from taking these steps. Mining and its infrastructure, which is required for the development of solar panels and wind turbines, uses gigantic volumes of water for it to work. Because of this, in many parts of Mexico (where North American mining companies currently have concessions on 40% of the country’s land area) and Latin America, mining is a question of taking water away from agriculture. The struggle against mining is not just a struggle against environmental destruction, but it is a struggle for food. The same can be said of foreign investments in wind turbine farms in Mexico and Puerto Rico, where local communities actually oppose these “renewable energy” infrastructures because they not only degrade the environment but also because it steals land that might otherwise be used for the direct needs of the locality. Those of us in the most developed and industrialized nations need to radically alter our conceptions of sustainability and what is possible – a process that should be guided and influenced by those currently most vulnerable. Many well-meaning activists in the West tend to take perspectives that never really question our own standard of living – a standard of living David Barkin so rightfully articulated as an abomination. We tend to favor “green energy” projects and the further development and industrialization of the “Global South” so that we don’t fundamentally have to make any sacrifices ourselves. Embedded in these perspectives are the racist and colonialist ideas that less developed countries in the world either don’t know what they want or don’t have the ability to create what they want themselves and thus need the technology and advances of the West to save them. David Barkin’s presentation was a blatant reminder that this is far from the truth. Right now, in Mexico and Latin America, there are communities directly involved in building their own alternatives. And these aren’t communities of just a few hundred people; these aren’t small, insignificant projects. These are communities as large as 50,000 people each – an entire network of more than 130 million people – directly struggling and fighting for a radically different future. We have much to learn and our time is running out. As industrial agriculture’s ability to produce food for the global population continues to decline, our resistance and our alternatives must escalate in lockstep – and there’s no reason for us to continue to ignore the alternative models and successes of our brothers and sisters in the rest of the world

### Yields Declinign

#### Industrial agriculture has hit biophysical yield. Prefer our evidence, their authors use a flawed growth model.

Ahmed 13 [(Nafeez, executive director of the Institute for Policy Research & Development) “Dramatic decline in industrial agriculture could herald 'peak food'”, The Guardian, 12/19/13] DD

Industrial agriculture **could be hitting** fundamental **limits in its capacity to produce sufficient crops to feed an expanding** global **population** according to new research published in Nature Communications. The study by scientists at the University of Nebraska-Lincoln argues that there have been abrupt declines or plateaus in the rate of production of major crops which undermine optimistic projections of constantly increasing crop yields. As much as "31% of total global rice, wheat and maize production" has experienced "yield plateaus or abrupt decreases in yield gain, including rice in eastern Asia and wheat in northwest Europe." The declines and plateaus in production have become prevalent despite increasing investment in agriculture, which could mean that maximum potential yields under the industrial model of agribusiness have already occurred. Crop yields in "major cereal-producing regions have not increased for long periods of time following an earlier period of steady linear increase." The paper makes for ominous reading. **Production levels have already flattened out with "**no **case of a** return **to the previous rising yield trend" for key regions amounting to "33% of global rice and 27% of global wheat production."** The US researchers concluded that these yield plateaus could be explained by the inference that "average **farm yields approach a** biophysical yield ceiling **for the crop in question,** which is determined by its yield potential in the regions where the crop is produced." They wrote: "... we found widespread deceleration in the relative rate of increase of average yields of the major cereal crops during the 1990–2010 period in countries with greatest production of these crops, and strong evidence of yield plateaus or an abrupt drop in rate of yield gain in 44% of the cases, which, together, account for 31% of total global rice, wheat and maize production." Past trends over the last five decades of perpetually increasing crop yields were "driven by rapid adoption of green revolution technologies that were largely one-time innovations" which cannot be repeated. These include major industrial innovations such as "the development of semi-dwarf wheat and rice varieties, first widespread use of commercial fertilizers and pesticides, and large investments to expand irrigation infrastructure." Although agricultural investment in China increased threefold from 1981 to 2000, rates of increase for wheat yields have remained constant, decreased by 64% for maize and are negligible in rice. Similarly, the rate of maize yield has remained largely flat despite a 58% investment increased over the same period. The study warns: "A concern is that despite the increase in investment in agricultural R&D and education during this period, the relative rate of yield gain for the major food crops has decreased over time together with evidence of upper yield plateaus in some of the most productive domains." **The study criticises most other yield projection models which predict compound or exponential production increases over coming years and decades**, even though **these "do not occur in the real world."** It notes that "such growth rates are not feasible over the long term because average farm yields eventually approach a yield potential ceiling determined by biophysical limits on crop growth rates and yield." Factors contributing to the declines or plateaus **in food production rates** include land and soil degradation, climate change and cyclical weather patterns, **use of** fertilisers **and pesticides,** and inadequate **or inappropriate** investment. **The new research raises critical questions about the capacity of** traditional **industrial agricultural** methods **to sustain** global food **production for a** growing world **population.** Food **production will need to increase by about 60% by 2050 to meet demand.** A report out this month from the Dutch bank Rabobank recommends cutting food waste by 10%, as over 1 billion tonnes - half of which is related to agriculture - ends up being wasted. **More efficient use of water is necessary**, the report says, such as micro-irrigation, to address a potential water supply deficit of 40% by 2030. Currently, **agriculture accounts for 70% of global water demand. The report also calls for a reduction in dependence on fertilisers using 'input optimisation' methods designed to reduce the amount of energy and water required**. As 53% of fertiliser nutrients remain in the ground post-harvest, fertilisers contribute to soil degradation over time due to groundwater contamination, leaching, erosion and global warming. The Rabobank obsession with focusing on improvement of existing industrial methods - without quite grasping the scale of the problems facing industrial agriculture - is, however, a serious deficiency. Two years ago, a landmark report by the UN Special Rapporteur on the Right to Food demonstrated that agroecology based on sustainable, small-scale, organic methods could potentially double food production in entire regions facing persistent hunger, over five to 10 years.

### Land Grabs

#### Food scarcity – and specifically land grabs by industrial ag companies – creates structural conditions that guarantee massive global conflict and global injustice

Brown 11 – (Lester R. is the President of the Earth Policy Institute, “The New Geopolitics of Food,” May 2011, <http://www.foreignpolicy.com/articles/2011/04/25/the_new_geopolitics_of_food?page=full>, Accessed Date: 3-15-13 y2k

The potential for conflict -- and not just over water -- is high. Many of the land deals have been made in secret, and in most cases, the land involved was already in use by villagers when it was sold or leased. Often those already farming the land were neither consulted about nor even informed of the new arrangements. And because there typically are no formal land titles in many developing-country villages, the farmers who lost their land have had little backing to bring their cases to court. Reporter John Vidal, writing in Britain's Observer, quotes Nyikaw Ochalla from Ethiopia's Gambella region: "The foreign companies are arriving in large numbers, depriving people of land they have used for centuries. There is no consultation with the indigenous population. The deals are done secretly. The only thing the local people see is people coming with lots of tractors to invade their lands." Local hostility toward such land grabs is the rule, not the exception. In 2007, as food prices were starting to rise, China signed an agreement with the Philippines to lease 2.5 million acres of land slated for food crops that would be shipped home. Once word leaked, the public outcry -- much of it from Filipino farmers -- forced Manila to suspend the agreement. A similar uproar rocked Madagascar, where a South Korean firm, Daewoo Logistics, had pursued rights to more than 3 million acres of land. Word of the deal helped stoke a political furor that toppled the government and forced cancellation of the agreement. Indeed, few things are more likely to fuel insurgencies than taking land from people. Agricultural equipment is easily sabotaged. If ripe fields of grain are torched, they burn quickly. Not only are these deals risky, but foreign investors producing food in a country full of hungry people face another political question of how to get the grain out. Will villagers permit trucks laden with grain headed for port cities to proceed when they themselves may be on the verge of starvation? The potential for political instability in countries where villagers have lost their land and their livelihoods is high. Conflicts could easily develop between investor and host countries. These acquisitions represent a potential investment in agriculture in developing countries of an estimated $50 billion. But it could take many years to realize any substantial production gains. The public infrastructure for modern market-oriented agriculture does not yet exist in most of Africa. In some countries it will take years just to build the roads and ports needed to bring in agricultural inputs such as fertilizer and to export farm products. Beyond that, modern agriculture requires its own infrastructure: machine sheds, grain-drying equipment, silos, fertilizer storage sheds, fuel storage facilities, equipment repair and maintenance services, well-drilling equipment, irrigation pumps, and energy to power the pumps. Overall, development of the land acquired to date appears to be moving very slowly. So how much will all this expand world food output? We don't know, but the World Bank analysis indicates that only 37 percent of the projects will be devoted to food crops. Most of the land bought up so far will be used to produce biofuels and other industrial crops. Even if some of these projects do eventually boost land productivity, who will benefit? If virtually all the inputs -- the farm equipment, the fertilizer, the pesticides, the seeds -- are brought in from abroad and if all the output is shipped out of the country, it will contribute little to the host country's economy. At best, locals may find work as farm laborers, but in highly mechanized operations, the jobs will be few. At worst, impoverished countries like Mozambique and Sudan will be left with less land and water with which to feed their already hungry populations. Thus far the land grabs have contributed more to stirring unrest than to expanding food production. And this rich country-poor country divide could grow even more pronounced -- and soon. This January, a new stage in the scramble among importing countries to secure food began to unfold when South Korea, which imports 70 percent of its grain, announced that it was creating a new public-private entity that will be responsible for acquiring part of this grain. With an initial office in Chicago, the plan is to bypass the large international trading firms by buying grain directly from U.S. farmers. As the Koreans acquire their own grain elevators, they may well sign multiyear delivery contracts with farmers, agreeing to buy specified quantities of wheat, corn, or soybeans at a fixed price. Other importers will not stand idly by as South Korea tries to tie up a portion of the U.S. grain harvest even before it gets to market. The enterprising Koreans may soon be joined by China, Japan, Saudi Arabia, and other leading importers. Although South Korea's initial focus is the United States, far and away the world's largest grain exporter, it may later consider brokering deals with Canada, Australia, Argentina, and other major exporters. This is happening just as China may be on the verge of entering the U.S. market as a potentially massive importer of grain. With China's 1.4 billion increasingly affluent consumers starting to compete with U.S. consumers for the U.S. grain harvest, cheap food, seen by many as an American birthright, may be coming to an end. No one knows where this intensifying competition for food supplies will go, but the world seems to be moving away from the international cooperation that evolved over several decades following World War II to an every-country-for-itself philosophy. Food nationalism may help secure food supplies for individual affluent countries, but it does little to enhance world food security. Indeed, the low-income countries that host land grabs or import grain will likely see their food situation deteriorate.

#### Inequality causes global warfare

Lown, 96 (Bernard Lown, MD, Co-Founder of the International Physicians for the Prevention of Nuclear War, 1996, Crude Nuclear Weapons Proliferation and the Terrorist Threat, IPPNW Global Health Watch Report Number 1,<http://www.ippnw.org/crudenukes.pdf>)

Nuclear apartheid cannot endure. The stimulus to proliferation derives largely from an inequitable world order and the growing economic divide between rich and poor countries. One fifth of the world lives on the edge of subsistence. At a time of potential abundance, more people are hungry than ever before. We end the century with far more desperately poor, illiterate, homeless, starving, and sick than we began. Nowhere are the inequities more in evidence than in the health sector. Eight hundred million people are without any health care at all. One-third of the world's population lives in countries whose health care expenditures are far less than $12 per person per year (the bare minimum recommended by the World Bank) while the industrialized North spends more than $1,000 for health per person annually. Recent UN figures indicate that from 1960 to 1990, per capita income rose eight-fold in the North while increasing only half as much in the deprived lands of the South. This divide is likely to widen further while accelerating over-consumption in the North and burgeoning population pressures in the developing countries. As vital raw materials, scarce minerals, fossil fuels, and especially water become depleted, Northern affluence will be sustained by imposed belt tightening of impoverished multitudes struggling for mere subsistence. This is an agenda for endless conflict and colossal violence. The global pressure cooker will further superheat by the ongoing worldwide information revolution that exposes everyone to the promissory note of unlimited consumption, there by instilling impatience and igniting more embers of social upheaval. If desperation grows, the deprived will be tempted to challenge the affluent in the only conceivable way that can make an impact, namely by going nuclear. Their possession enables the weak to inflict unacceptable damage on the strong. Desperation and hopelessness breed religious fundamentalism and provide endless recruits ready to wreak vengeance, if necessary by self immolation in the process of inflicting unspeakable violence on others. A nuclear bomb affords "the cheapest and biggest bang for the buck." No blackmail is as compelling as holding an entire city hostage. No other destructive device can cause greater societal disruption or exact a larger human toll. Terrorists will soon raise their sights to vaporizing a metropolitan area rather than merely pulverizing a building.

#### Organics solves land usage

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

Our results suggest that organic methods of food production can contribute substantially to feeding the current and future human population on the current agricultural land base, while maintaining soil fertility. In fact, the models suggest the possibility that the agricultural land base could eventually be reduced if organic production methods were employed, although additional intensification via conventional methods in the tropics would have the same effect. Our calculations probably underestimate actual output on many organic farms. Yield ratios were reported for individual crops, but many organic farmers use polycultures and multiple cropping systems, from which the total production per unit area is often substantially higher than for single crops 48,58. Also, there is scope for increased production on organic farms, since most agricultural research of the past 50 years has focused on conventional methods. Arguably, comparable efforts focused on organic practices would lead to further improvements in yields as well as in soil fertility and pest management. Production per unit area is greater on small farms than on large farms in both developed and developing countries59; thus, an increase in the number of small farms would also enhance food production. Finally, organic production on average requires more hand labor than does conventional production, but the labor is often spread out more evenly over the growing season25,60–62. This requirement has the potential to alleviate rural unemployment in many areas and to reduce the trend of shantytown construction surrounding many large cities of the developing world. Pg. 94

### Misallocation not Yields

#### It’s a question of allocation, not yields – increased production is ineffective

Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

The big question that many skeptics would ask is: why then is there so much food scarcity in developing countries? If industrial agriculture and cheap subsidized imports from the North eliminated, can developing countries produce enough food for themselves? Analysts Lappe, Collins and Rosset explore this question with regard to Africa. Africa is home to 213 million chronically malnourished people (25 per cent of the total in developing countries). By 1995, over one-third of the continent’s grain consumption apparently depended on imports. However, according to researchers, Africa has enormous, still unexploited potential to grow food. In countries notorious for famines, the area of unused good-quality farmland is many times greater than the area actually farmed. A central reason for Africa’s lack of food production is due to the colonial land grab that has continued into the modern era. It has displaced peoples and production of foodstuffs from good lands toward marginal ones. The good land is mostly dedicated to the production of cash crops for export or is even unused by its owners. Also, public resources, including research and agricultural credit, have been channeled to export crops to the virtual exclusion of peasant-produced food crops. Since the 1980s, the pressure to export to pay interest on foreign debt has reinforced this imbalance. The other factor which has greatly impoverished African peasants is the subsidized food surpluses from the developed countries which are dumped on Africa. This often takes away the entire local market for the local producers, who end up in debt, landless or even bankrupt. Today, agribusiness companies are promoting the ‘life sciences’ and its genetically modified seeds and production methods as the new revolution that will answer the question of hunger in the world. There are promises of yield increases, pest resistance, and even foods that are more nutritious (e.g. Vitamin A rice). Unfortunately, like the last revolution, the hunger problem has been premised wrongly, with the assumption that there will not be enough food to feed the world, rather than the more pertinent question about food distribution and access. Genetically modified (GM) seeds and production methods will bring about outcomes for small farmers which are similar to the Green Revolution experiences. GM crops are also high chemical input crops. The socially inequitable outcomes will be the same and may be even worse, since the technology is patented by transnational corporations. Small farmers will be in the same position in the commodity chain. They will be at the mercy of intermediaries, contractors and exporters and will have to bear the brunt of all weather and crop risks. They will receive similarly meager returns, if any, in contrast to the players in the pre and post farmgate operations -- i.e. the transnational food, transport and retail corporations. In addition, the ecological risks are likely to be as damaging. All the evidence to date points to as much or increased pesticide use. Weeds and pests are also likely to gain genetic resistance to pesticides. GM crops will also be planted as monocultures, hence the ecological problems associated with the hazards for biodiversity will be present. The damage may be even more pronounced given the as yet unknown metabolic effects of genetically modified crops and their spread to their wild relatives, not to mention the still unknown health effects it could have on consumers. Rosset, Collins and Lappe conclude that ‘Introducing any new agricultural technology into a social system stacked in favour of the rich and against the poor -- without addressing the social questions of access to the technology’s benefits -- will over time lead to an even greater concentration of the rewards from agriculture’. In a similar vein, experts Altieri and von der Weid observe that ‘If the root causes hunger, poverty … are not addressed, hunger will persist no matter what agricultural technologies are used. Most modern agricultural technologies have the potential to deal with the issue of quality and quantity of food, but does not address the distributive and access aspects of food which are at the heart of the hunger problem.’ They conclude that to insist on only technological solutions to hunger ignores the tremendous complexity of the problem of food scarcity. Indeed, the UN has projected recently that there will be ‘drastic deceleration’ in world demographic growth. The world population is expected to be 8 billion in 2030. The growth rate of the world population, which had peaked in the second half of the 1960s at 2.1 per cent per annum had fallen to 1.3 per cent by the late 1990s will fall to a mere 0.3 per cent by 2050. A very recent FAO study has concluded -- without taking into consideration any production differences that may result from genetically modified crops -- that ‘for the world as a whole there is enough, or more than enough, food production potential to meet the growth of effective demand, i.e. the demand for food of those who can afford to pay farmers to produce it’. That is, the residual hunger problems will be largely poverty, rather than production related. According to Amartya Sen, famines have occurred not because of shortage of food, but because people’s claim to food is disrupted. When people are denied the resources to grow or retain enough of their own harvests to meet family needs, and when only buying power / money, gives people claim to additional food, many will go hungry, and even starve if their income falls or food prices dramatically rise. People’s incomes are very vulnerable to fluctuations. They may fall because they lose their means to produce. Poor people might have to sell their land or animals because of a death in the family, or mounting debts might mean that they lose their land after a single bad harvest. Often the price of what the poor produce suddenly drops, leaving them unable to buy enough food. In short, if the people’s claim to food is only through the market, yet the prices they get remain volatile as a result of not having control over prices, then people will die in famines, no matter how much food is produced. Global food security is therefore not a substitute for domestic or local food security. The main reason why people go hungry is not due to a shortage of food, but remains an issue of access and whether they have the entitlements needed to produce their own food for their families’ consumption. Alternative egroecological methods of producing food for family and local consumption is, in contrast to industrial high-input systems, an option that can provide the rural poor with stable food supplies, adequate access to food, livelihood security and ecological sustainability for continued long-term food production.

### Soil Erosion

#### Industrial ag not sustainable – destroys soil and desertification

Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

Yield increases from high yielding Green Revolution technologies have been decelerating, and in some cases stagnating and even contracting. The highest yields have been obtained by using ever larger inputs of fertilizer and irrigation water, which in many places have passed the point of diminishing returns. Greater use of these inputs is becoming less productive. In comparison to traditional varieties, outputs are small. Traditional rice farming in Asia produced 10 times more energy in food than was expended to grow it. Today’s Green Revolution rice production cuts the net output in half. According to Cambridge University Geographer, Bayliss-Smith, the gains drop to zero in a fully industrialized system such as that of the US. In India, adoption of the new Green Revolution seeds led to a six-fold increase in fertilizer use per acre. Farmers used an average of 12.7 kg/ha of fertilizer in 1970. By 1995, usage had gone up to 76.6 kg/ha. While food grain production increased 84 per cent from 82 million tones in 1961 to 185 million tones in 1997, consumption of chemical fertilizers rose from 292 thousand tones in 1961 to 16,422 thousand tones in 1996-97, a 15,000 per cent increase. Similarly, in the Philippines, rice production increased in the late 1970s, and early 1980s as a result of the Green Revolution, but has since been on the decline. Analysts attribute it to these ‘high yielding varieties’. Why is this happening? Experts are concluding that clearly, chemical fertilizers are destroying the quality of the soil. Yields are falling because chemical fertilizers are not a sustainable source of soil fertility. In the long run, these methods encourage desertification, soil erosion, pesticide contamination and the depletion of groundwater. Yet these ecological problems are ignored because of the difficulty in quantifying and assigning monetary values to ecological degradation. These remain hidden costs behind the yields obtained in conventional farming.

### Food as a Commodity

#### Industrial agriculture treats food as a commodity – moral obligation to give control of food to the communities who need it

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

A salient feature of these agreements is that food is treated as a commodity rather than as crucial for the survival of all humans. Given that food is a basic necessity of life, unlike other commodities such as tires or computers, many governments and civil society movements believe that such policies are grievously misguided. As Lori Wallach of Public Citizen puts it, “Food—like water—is not an optional product that consumers may choose to purchase: food is the basis of life. People without food die, while people without cars or tires walk and people without tin ore use local materials.”3 As such, many believe that governments have an obligation to ensure food as a basic human right. The result of this shift has been a loss of livelihoods for millions of farmers, and the depression of rural communities; an increase in hunger in many parts of the globe; compromised nutrition and safety of food; increased environmental destruction; and the control of food production and distribution by an ever-smaller number of giant global agribusinesses. (See Box 1.) These are some of the outcomes of this shift: ❖ Local self-reliant food systems that had provided food and livelihoods for millions, and a secure food supply, are rapidly being replaced by corporate control—often foreign corporations—over farm inputs, energy, crop commodity prices, food production, and marketing. These corporations value profits and export trade over the needs of local communities for food and sustainable products. ❖ Industrial agriculture eliminates diverse food production for local needs, replacing it with large scale monocultural production of one or two crops appropriate for export markets; thus, diminishing natural biodiversity—of micro organisms, plants, insects, and animals, and diminishing local food supply as well. ❖ Heavy use of industrial agricultural processes, including pesticides, chemical fertilizers and fossil fuel-based machinery are rapidly destroying the vitality of the soil, polluting and over-using scarce fresh water, polluting the air, and harming wildlife and humans. ❖ The corporate introduction of genetically modified organisms (GMOs) and plants further destroys biodiversity and brings unknown, potentially catastrophic dangers via new forms of biopollution. ❖ The export driven model of globalized agriculture requires a huge increase in transport infrastruc- tures —roads, ports, airports, energy grids—often constructed at the expense of nature and in defiance of global energy shortages. ❖ Massive shipments of agricultural commodities across great distances requires additional fossil fuel usage, refrigeration, packaging, etc. and fosters mobility of exotic plant and animal species, and the spread of pests, viruses, bacteria, and disease. ❖ Control over and access to the most essential elements of life—the commons—are being stripped away from local communities and given over to corporations (often via World Bank privatization schemes). ❖ Traditional knowledge of seeds, plants, and cultivation are being expropriated for profit, and patented by large corporations—a process known as “biopiracy.” ❖ Agriculture accounts for approximately 25 percent of carbon dioxide emissions; and 70 percent of nitrous oxide emissions.4

### Empirics

#### Organic ag can produce 57% more efficiently in developing countries

Badgley et al 07 [Catherine Badgley (Museum of Palaeontology, University of Michigan), Jeremy Moghtader (School of Natural Resources and Environment, University of Michigan),3, Eileen Quintero (School of Natural Resources and Environment, University of Michigan), Emily Zakem (School of Art and Design, University of Michigan), M. Jahi Chappell (Department of Ecology and Evolutionary Biology, University of Michigan), Katia Aviles-Vazquez (School of Natural Resources and Environment, University of Michigan), Andrea Samulon (School of Natural Resources and Environment, University of Michigan), and Ivette Perfecto (School of Natural Resources and Environment, University of Michigan). "Organic agriculture and the global food supply." Renewable agriculture and food systems 22.2 (2007): 86-108] AJ

Both models suggest that organic methods could sustain the current human population, in terms of daily caloric intake (Table 5). The current world food supply after losses19 provides 2786 kcal [per] person-1 [per] day-1. The average caloric requirement for a healthy adult38 is between 2200 and 2500 kcal day- 1. Model 1 yielded 2641 kcal person- 1 day- 1, which is above the recommended value, even if slightly less than the current availability of calories. Model 2 yielded 4381 kcal person- 1 day- 1, which is 57% greater than current availability. This estimate suggests that organic production has the potential to support a substantially larger human population than currently exists. Significantly, both models have high yields of grains, which constitute the major caloric component of the human diet. Under Model 1, the grain yield is 93% that of current production. Under Model 2, the grain yield is 145% that of current production (Table 5). The most unexpected aspect of this study is the consistently high yield ratios from the developing world (Table A1, Appendix 1). These high yields are obtained when farmers incorporate intensive agroecological techniques, such as crop rotation, cover cropping, agroforestry, addition of organic fertilizers, or more efficient water management16,39. In some instances, organic-intensive methods resulted in higher yields than conventional methods for the same crop in the same setting (e.g., the system of rice intensification (SRI) in ten developing countries39). Critics have argued that some of these examples exceed the intrinsic yield limits set by crop genetics and the environmental context40. (Such contro- versy surrounds the ‘SRI’ and our data include studies from both sides of this controversy.) Yet alternative agricultural methods may elicit a different pathway of gene expression than conventional methods do41. Thus, yield limits for conventionally grown crops may not predict the yield limits under alternative methods.

#### Prefer the study on scope and because it’s an experimental comparison that isolates causality.

Badgley et al 07 [Catherine Badgley (Museum of Palaeontology, University of Michigan), Jeremy Moghtader (School of Natural Resources and Environment, University of Michigan),3, Eileen Quintero (School of Natural Resources and Environment, University of Michigan), Emily Zakem (School of Art and Design, University of Michigan), M. Jahi Chappell (Department of Ecology and Evolutionary Biology, University of Michigan), Katia Aviles-Vazquez (School of Natural Resources and Environment, University of Michigan), Andrea Samulon (School of Natural Resources and Environment, University of Michigan), and Ivette Perfecto (School of Natural Resources and Environment, University of Michigan). "Organic agriculture and the global food supply." Renewable agriculture and food systems 22.2 (2007): 86-108] AJ

Deriving yield ratios. We estimated the global organic food supply by multiplying the amount of food in the current (2001) food supply by a ratio comparing average organic: non-organic yields. Comparisons of organic to non-organic production are available for many plant foods and a few animal foods. For each of 293 comparisons of organic or semi-organic production to locally prevalent methods under field conditions, the yield ratio is the ratio of organic: non-organic production. A ratio of 0.96, for example, signifies that the organic yield is 96% that of the conventional yield for the same crop. The comparisons include 160 cases with conventional methods and 133 cases with low-intensive methods. Most examples are from the peer-reviewed, published literature; a minority come from conference proceedings, technical reports, or the Web site of an agricultural research station. Like Stanhill’s 1990 survey of organic and conventional pro- duction23, our data include numerous comparisons from paired farms and controlled experiments at research stations. The studies range in observation length from a single growing season to over 20 years. Despite the ob- servation that yields following conversion from conven- tional to organic production initially decline and then may increase with time24,25 (but see ref. 23), we included studies regardless of duration. All of Stanhill’s examples (which are included here) were from the developed world, whereas our dataset also includes diverse examples from the developing world. No attempt was made to bias the results in favor of organic yields; many examples from developed and developing countries exhibit low compara- tive yields. We avoided generalizations based on country- wide or regional average yields by organic or conventional methods. Some examples are based on yields before and after conversion to organic methods on the same farm.

### Land Efficiency

#### Land allocation efficiency

Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

One of the myths about industrial agriculture is that it is a land-saving system. In fact, monocultures and the separation of crops from livestock necessitate much higher amounts of land than traditional polycultures, and systems integrating crops and livestock. Since monocultures eliminate diversity and the multiple uses of land, and instead provide a single output, additional acres are required to produce the output which would otherwise have been produced on the same piece of land. Shiva explains it as follows: If traditional varieties produce 1000 kg/acre grain and 1000kg/acre fodder, then industrial varieties produce 1200 kg/acre of grain and 0 kg of fodder. Thus another acre has to be used for fodder production. The two acres, without chemical inputs and new seeds, could have produced 2000 kg grain plus 2000 kg of fodder on 2 acres. Likewise, crop production strategies which ignore livestock as an important source of soil fertility leads to the intensification of agriculture through the use of non-sustainable chemical inputs for fertilizers. In addition, industrial livestock farming in fact consumes three times more acres of land than ecologically rearing livestock. Analysts have calculated that Europe in fact uses seven times the area of Europe in Third World countries for cattle feed production. For fodder alone (including that used to produce food products for export) the Netherlands appropriates 100,000 to 140,000 square kilometers of arable land. This is often referred to as ‘shadow acres’ and much of it comes from developing countries. This is 5-7 times the area of agricultural land in that entire country. It has been concluded that the combination of industrial plant breeding and industrial animal breeding increases the pressure on land-use by a factor of 400% while separately increasing output of grain and milk by only a factor of 20%. Shiva concludes that one acre of a farm that only uses inputs derived from the farm itself with integrated livestock and crop production can support a family and two farm animals. If both crop production and livestock are made to rely on intensive inputs, the same family and two animals require additional shadow acres of land to produce the inputs and absorb the pollution.

### A2 Seed Quality

#### GMO seeds actually have lower yields than normal ones – the use of pesticides masks the issue

Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

A landmark in the spread of industrial agricultural methods was the Green Revolution, which brought the advent of ‘miracle seeds’ in the 1960s and 1970s. It was found that these improved varieties dramatically increased yields as compared to traditional varieties. According to analysts Lappe, Collins and Rosset, the main reason why ‘modern varieties’ produce more than traditional varieties is that they are more responsive to controlled irrigation and petrochemical fertilizers, hence allowing for much more efficient conversion of industrial inputs into food. Other researchers such as Palmer of the UNRISD has termed them ‘high-responses varieties (HRVs), rather than high yielding seeds. In the absence of the fertilizers and irrigation, the new seeds in fact have lower yields than indigenous varieties.

### A2 Hunger Falling

#### Hunger is a result of failure to distribute and systemic poverty – production rose but so did hunger

Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

Did the Green Revolution reduce hunger? Comparing the number of hungry people in the world in 1970 versus 1990 (spanning the two decades of major Green Revolution advances), a first glance seems to indicate significant progress. The total food available per person in the world rose by 11 per cent. The number of chronically undernourished fell from 942 million to 786 million, a 16 per cent drop. However, on closer examination, and if China was eliminated from the analysis, the number of hungry in the world actually increased by more than 11 per cent, from 536 million to 597 million. In South America, where per capita food supplies rose almost 8 per cent, the number of hungry people went up by 19 per cent. In South Asia, there was 9 per cent more food per person by 1990, but there was also 9 per cent more hungry people. It was also not due to increased population that brought about greater hunger. The total food available per person in fact increased. It seems that greater hunger was the failure to address unequal access to food and food-producing resources.

### A2 Need Fertilizer

#### Green manure successfully fixes Nitrogen—it increases yield, is drought resistant and reduces plant diseases.

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

Organic nitrogen fertilizer - In 2001, the global use of synthetic N fertilizers was 82 million Mg (metric ton)19. Our global estimate of N fixed by the use of additional leguminous crops as fertilizer is 140 million Mg, which is 58 million Mg greater than the amount of synthetic N currently in use (Table 4). Even in the US, where substantial amounts of synthetic N are used in agriculture, the estimate shows a surplus of available N through the additional use of leguminous cover crops between normal cropping periods. The global estimate is based on an average N availability or N-fertilizer equivalency of 102.8 kgNha-1 (S.D. 71.8, n = 76, Table A2, Appendix 2). For temperate regions, the average is 95.1 kg Nha-1 (S.D. 36.9, n = 33) and for tropical regions, the average is 108.6 kg Nha-1 (S.D. 99.2, n = 43). These rates of biological N fixation and release can match N availability with crop uptake and achieve yields equivalent to those of high-yielding conventionally grown crops42. In temperate regions, winter cover crops grow well in fall after harvest and in early spring before planting of the main food crop43. Research at the Rodale Institute (Pennsylvania, USA) showed that red clover and hairy vetch as winter covers in an oat/wheat–corn–soybean rotation with no additional fertilizer inputs achieved yields comparable to those in conventional controls24,25,44. Even in arid and semi-arid tropical regions, where water is limiting between periods of crop production, drought resistant green manures, such as pigeon peas or groundnuts, can be used to fix N 26,45,46. Use of cover crops in arid regions has been shown to increase soil moisture retention 47, and management of dry season fallows commonly practiced in dry African savannas can be improved with the use of N-fixing cover crops for both N-fixation and weed control48. Areas in sub-Saharan Africa which currently use only very small amounts of N fertilizer (9 kg ha-1, much of it on non-food crops48) could easily fix more N with the use of green manures, leading to an increase in N availability and yields in these areas26. In some agricultural systems, leguminous cover crops not only contribute to soil fertility but also delay leaf senescence and reduce the vulnerability of plants to disease30. Pg. 92-93

#### Crop rotation with legumes increase Nitrogen fixing.

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

Our estimates of N availability from leguminous cover crops do not include other practices for increasing biologically fixed N, such as intercropping49, alley cropping with leguminous trees50, rotation of livestock with annual crops32, and inoculation of soil with free-living N-fixers51—practices that may add considerable N fertility to plant and animal production52. In addition, rotation of food-crop legumes, such as pulses, soy, or groundnuts, with grains can contribute as much as 75 kg Nha-1 to the grains that follow the legumes33. These methods can increase the N-use efficiency by plants. Since biologically available N is readily leached from soil or volatilized if not taken up quickly by plants, N use in agricultural systems can be as low as 50%53. Organic N sources occur in more stable forms in carbonbased compounds, which build soil organic matter and increase the amount of N held in the soil25,54. Consequently, the amount of N that must be added each year to maintain yields may actually decrease, because the release of organic N fixed in one season occurs over several years30. Pg. 93

## Pesticides

### Treadmill

#### Pesticide use constantly escalates – creates increasing toxicity and destroys agriculture

Picone and Tassel 2 [C. Picone and D. Van Tassel, 2002. Research Scientsist at the Land Institute and Professor and Chair of the Department of History at Case Western Reserve University. “Agriculture and Biodiversity Loss: Industrial Agriculture,” The Land Institute, http://www.landinstitute.org/vnews/display.v/ART/2002/08/23/439bd36c9acf1]

The U.S. Environmental Protection Agency estimates that 2 billion kg of pesticides are applied in the United States each year, and 10 billion are applied around the world. Use of synthetic pesticides increases our dependence on them in a process called the "pesticide treadmill." Insecticides and fungicides do not destroy only pests; they also kill their natural enemies. The natural enemies of insect pests include other insects that are parasites and predators, as well as pathogenic fungi. Pest species evolve resistance to pesticides much faster than their enemies, and thus pest populations quickly recover. Loss of natural enemies also leads to outbreaks of "secondary pests" — species that are not a problem until pesticides eliminate their natural enemies. As a result of pest resistance and secondary pest outbreaks, increasing amounts of pesticides must be applied, or more toxic chemicals must be developed. This is an arms race that we are losing. Despite the constant increase in pesticide use (Figure 1), loss of crops to insect pests was greater in 1989 (13 percent loss) than in 1945 (7 percent loss). Pesticides have impacts far beyond their target organisms. Scientists at Cornell University estimate that 67 million birds are killed each year in the United States from pesticides. Many individuals of some bird species have died after eating sprayed insects. Pesticides from agriculture flow into aquatic systems via runoff of surface water, soil erosion, and drainage into groundwater. Pesticide residues in streams, lakes, bays, and coral reefs kill aquatic plants and zooplankton (microscopic animals) that fish require for food. More directly, very low concentrations of pesticides in water have been shown to increase the mortality of young fish and amphibians. Pesticides and other toxins have an important effect on wildlife through "bioaccumulation." Certain kinds of pesticides are persistent — that is, they do not break down as they pass through the food chain. They can be taken up by small aquatic organisms and insects and are then passed on to the fish that eat them. Those fish are eaten by larger fish, which are eaten by predators such as eagles, pelicans, seals, and bears. The toxins become increasingly concentrated in the higher levels in this food chain, so top predators accumulate dangerous concentrations. The decline in the bald eagle population in the 1900s was linked to bioaccumulation of persistent pesticides, especially DDT (dichlorodiphenyltrichloroethane). Such toxins affect the eagles' nervous systems and cause their eggshells to become fatally thin. The use of DDT was banned in the United States in the 1970s, and eagles have since recovered. Today many persistent pesticides have been replaced by alternative chemicals that are more short-lived — but more acutely toxic.

#### Pesticides also unsustainable – develop resistance

Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

Another significant issue that must be addressed as a result of industrialized food production systems is the increasing dependence on pesticides. Monocultures erode diversity. It is diversity that increases resistance to pests. In a holistic system, a problem in a part of the system can be absorbed or counter-balanced by the entire system. This is why the polycultural system is widely recognized as more stable. This is not the case with monocultures. Without the advantages of a balanced eco-system, pest infestations are common, so that the entire crop can be easily destroyed. Chemical pesticides are in fact creating more pests than controlling pests. By contributing to the emergence of resistance in pests and by destroying natural enemies and predators, pesticides increase pest problems. Globally, 450 species of insects and mites, 100 species of plant pathogens, 48 species of weeds have become resistant to one or more pesticide products. In California, of 25 insect pests, 72 per cent are resistant to one or more pesticides and 96 per cent are pesticide created or aggravated. Case Study: Pesticide Problems in Guatemala’s Nontraditional Sector Research in the Guatemalan highlands where nontraditional crops have been cultivated showed that as farmers were increasing pesticide use, pests were becoming ‘stronger’. Comparison of crops organically grown and those under chemical intensive methods showed that pests were commonly absent in vegetables such as [which were] organically grown snow peas, while chemical intensive plots showed relatively high levels of these pests. When comparing damage due to plant disease of both groups, it was found that damage was considerably lower in organically grown broccoli and snow peas than in fields where they were grown chemically with herbicides, pesticides and fertilizers. Indeed, for snow peas, the damage was 10-times greater for chemically treated plots. Similarly, in terms of soil quality and soil erosion (the most powerful indicators of ecological well-being), it was found that these were much better for traditional crops (corn and beans) than the nontraditionals. For example, the research found far fewer earthworms (their quantity is an indicator of soil quality) in broccoli fields than in corn, and no earthworms in snow pea fields (those with the heaviest uses of pesticides). The researchers have concluded that ‘heavy and inappropriate uses of chemicals worsen the conditions they were designed to remedy, creating an ecological imbalance for continued production of the same crop.’ Here again, the problems of heavy pesticide use have not affected all players alike. When the ecological problems have reached crisis-generating levels, such as the collapsing of the entire sector due to pesticide residues and pesticide-resistant pests, transnational operators and exporters are quick to close down their operations overnight and move to another locality or region to set up their export operations free of the ecological problems they have created. In contrast, the thousands of farming families left behind have to deal with an ecological crisis on their hands. Reference: Conroy, Murray and Rosset 1996 ‘A Cautionary Tale: Failed US Development Policy in Central America’, Rienner Publishers, London. The strengthening and growing resistance of pests is hardly surprising given that 4.7 billion pounds of pesticides are used annually throughout the world. World pesticide use has increased 26 fold in the last 50 years. In 1996, total pesticide sales topped $33 billion. The value of world exports of pesticides increased more than eight times in less than four decades, from $1.3 billion in 1961 to $11 billion in 1997. Most exports originate from industrial countries.

### Poisoning Impacts

#### *Pesticides cause poisoning*

*Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ*

*The other facet of the pesticide problem are the costs to human health. Estimates of pesticide poisonings in the third world are as high as 25 million people yearly. Many cases go unreported, partly because growers’ actively prevent reporting. The most harmful chemicals end up in developing countries. Many industrialized countries continue to export chemicals that are deemed too deadly for domestic use. Despite the awareness of bioaccumulating chemicals (ie, each link or species in the food chain takes up the previous link’s exposure, adding it to their own and magnifying the effects), this trend is getting worse. Between 1992 and 1996, US chemical companies increased exports of domestically prohibited pesticides by 18 per cent. The rate of exports of pesticides that have never been registered jumped 40 per cent during this time. More than 14 per cent of all US pesticide exports are in some way restricted from use within the country itself. Beyond causing cancer, new evidence suggests that pesticides may have many other dangerous effects. For example, many pesticides fall into a category of chemicals called ‘endocrine disrupters’ , some of which directly affect the reproductive system.*

#### Pesticides cause fertility decreases that results in extinction

WDP 97 [Western Daily Press, 10/6/1997. “Diana's gone all sari-eyed,”]

For new research claims that PMT - which is supposed to be due to drops in oestrogen levels - is a myth, it's all in the mind, just an excuse used by women when they have those perfectly normal random bouts of depression or irritability which men get too. Only men don't have a convenient hormonal syndrome they can blame. Oestrogen is clearly tricky stuff, for elsewhere, scientists are blaming it for the potential extinction of mankind. Oestrogen in the atmosphere - and the industrial chemicals and pesticides which mimic it - are, they say, causing increases in cancer and dramatic drops in fertility in males of many species, including humans. It could, indeed, wipe out the human race. We don't dispute the way high levels of testosterone can affect males, so how come people are so eager to deny that similar changes in oestrogen levels can make us women a bit tetchy at times? Surely if it's powerful enough to result in the destruction of planetary life, it's not unreasonable to think oestrogen might also cause a teensy- weensy bit of disturbance in women now and again?

### A2 Pesticides Good

#### Pesticides are useless – mainly for appearance.

Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

Much of the problem with the use of pesticides has to do with meeting the cosmetic standards of consumers in the export markets, particularly the industrialized countries. Lappe, Collins and Rosset estimate that in the US, from 60-80 per cent of the pesticides applied to oranges and 40-60 per cent of that applied to tomatoes are used only to improve appearance. Less than 0.1 per cent of the pesticides applied to crops actually reach target pests. The rest moves into ecosystems, contaminating the land, water and air.

## Disease

### Antibiotic Resistance

#### Industrial farming creates antibiotic resistance

Cassuto and Saville 12 [(David, professor at Pace Law School and the Director of the Brazil-American Institute for Law and Environment, Visiting Professor of Law at the Federal University of Bahia, Brazil; and Sarah, J.D. Candidate, Class of 2012, at Pace Law School) “HOT, CROWDED, AND LEGAL: A LOOK AT INDUSTRIAL AGRICULTURE IN THE UNITED STATES AND BRAZIL” ANIMAL LAW Vol. 18:2] AT

The U.S. introduced industrial agriculture to the world. Industrial agriculture has become so prevalent in the U.S. that small family farms have become something of a rarity.54 This Section looks at the domestic impacts of the spread of factory farming. 1. Animal Illnesses Caused by Feed Agricultural animals are fed unnaturally fatty diets, and sometimes growth hormones.55 Chickens and pigs often become so heavy that their legs cannot support their bodies to walk to food and water,56 and cattle are fattened with a diet of hormones, rich grains,57 and government-subsidized corn.58 Cows’ natural digestive systems are specialized to feed on grass. The corn-based diet causes severe health problems, including chronic digestive pains, intestinal ulcers, and fatal liver abscesses.59 2. Antibiotics Industrial agriculture’s excessive use of antibiotics poses threats to human and animal health. Approximately 80% of America’s 29 million pounds of antibiotic consumption is used to hasten livestock growth.60 Large amounts of antibiotics pass through the animals and end up in the ecosystem.61 This contributes to antibiotic resistance in bacteria, which makes it harder to treat human illnesses.62

#### Antibiotic-resistant diseases cause extinction

Sample 13 [Ian, Science Correspondent for the Guardian, citing Dame Sally Davies, United Kingdom Chief Medical Officer, January 23, “Antibiotic-Resistant Diseases Pose 'Apocalyptic' Threat, Top Expert Says,” http://www.theguardian.com/society/2013/jan/23/antibiotic-resistant-diseases-apocalyptic-threat]

Britain's most senior medical adviser has warned MPs that the rise in drug-resistant diseases could trigger a national emergency comparable to a catastrophic terrorist attack, pandemic flu or major coastal flooding. Dame Sally Davies, the chief medical officer, said the threat from infections that are resistant to frontline antibiotics was so serious that the issue should be added to the government's national risk register of civil emergencies. She described what she called an "apocalyptic scenario" where people going for simple operations in 20 years' time die of routine infections "because we have run out of antibiotics". The register was established in 2008 to advise the public and businesses on national emergencies that Britain could face in the next five years. The highest priority risks on the latest register include a deadly flu outbreak, catastrophic terrorist attacks, and major flooding on the scale of 1953, the last occasion on which a national emergency was declared in the UK. Speaking to MPs on the Commons science and technology committee, Davies said she would ask the Cabinet Office to add antibiotic resistance to the national risk register in the light of an annual report on infectious disease she will publish in March. Davies declined to elaborate on the report, but said its publication would coincide with a government strategy to promote more responsible use of antibiotics among doctors and the clinical professions. "We need to get our act together in this country," she told the committee. She told the Guardian: ""There are few public health issues of potentially greater importance for society than antibiotic resistance. It means we are at increasing risk of developing infections that cannot be treated – but resistance can be managed. "That is why we will be publishing a new cross-government strategy and action plan to tackle this issue in early spring." The issue of drug resistance is as old as antibiotics themselves, and arises when drugs knock out susceptible infections, leaving hardier, resilient strains behind. The survivors then multiply, and over time can become unstoppable with frontline medicines. Some of the best known are so-called hospital superbugs such as MRSA that are at the root of outbreaks among patients. "In the past, most people haven't worried because we've always had new antibiotics to turn to," said Alan Johnson, consultant clinical scientist at the Health Protection Agency. "What has changed is that the development pipeline is running dry. We don't have new antibiotics that we can rely on in the immediate future or in the longer term." Changes in modern medicine have exacerbated the problem by making patients more susceptible to infections. For example, cancer treatments weaken the immune system, and the use of catheters increases the chances of bugs entering the bloodstream. "We are becoming increasingly reliant on antibiotics in a whole range of areas of medicine. If we don't have new antibiotics to deal with the problems of resistance we see, we are going to be in serious trouble," Johnson added.

### Disease Impacts

#### Can’t solve superbugs – financial incentives only exist for antibiotics and those make the problem worse

Hirschler 3-18 [Ben, Reuters, Even as superbugs spread, no rush to fix antibiotic crisis, http://vitals.nbcnews.com/\_news/2013/03/18/17359200-even-as-superbugs-spread-no-rush-to-fix-antibiotic-crisis]

Today, as the world confronts another crisis, this time one of antibiotic resistance, the industry is doing the opposite. It is cutting research in a field that offers little scope for making money.¶ Antibiotics have become victims of their own success. Seen as cheap, routine treatments, they are overprescribed and taken haphazardly, creating "superbugs" they can no longer fight.¶ These "superbugs" are growing, but are not yet widespread, so the costly research needed to combat them is not worthwhile. Medical experts say this dilemma could return medicine to an era before Alexander Fleming discovered penicillin in 1928.¶ Fixing the problem will need both faster approval of last-resort drugs and new ways to guarantee rewards for companies, according to both industry leaders and public health officials who have been sounding the alarm.¶ Paul Stoffels, pharmaceuticals head at Johnson & Johnson, is better placed than many to understand the problems.¶ His company offered a rare glimmer of hope in December when it won regulatory approval for a new treatment for drug-resistant tuberculosis -- a growing issue in many countries.¶ Unfortunately for the world, it was a one-off and J&J is not currently developing any more antibiotics.¶ "The market for a new antibiotic is very small, the rewards are not there and so the capital is not flowing," he said in an interview in London.¶ "It's about the sheer amount of money people are prepared to pay for a drug. In cancer, people pay $30,000, $50,000 or $80,000 (per patient) for a drug, but for an antibiotic it is likely to be only a few hundred dollars."¶ On Monday, AstraZeneca, facing tough decisions about where to invest, said it would put less money in developing anti-infectives. "We have to make choices and we have to focus our investments where we think we can make a substantial difference," CEO Pascal Soriot told Reuters.¶ The regulatory bar for drug approval is a key consideration for any company weighing R&D investment.

#### The impact is extinction

Quammen 12 David, award-winning science writer, long-time columnist for Outside magazine for fifteen years, with work in National Geographic, Harper's, Rolling Stone, the New York Times Book Review and other periodicals, 9/29, “Could the next big animal-to-human disease wipe us out?,” The Guardian, pg. 29, Lexis

Infectious disease is all around us. It's one of the basic processes that ecologists study, along with predation and competition. Predators are big beasts that eat their prey from outside. Pathogens (disease-causing agents, such as viruses) are small beasts that eat their prey from within. Although infectious disease can seem grisly and dreadful, under ordinary conditions, it's every bit as natural as what lions do to wildebeests and zebras. But conditions aren't always ordinary. Just as predators have their accustomed prey, so do pathogens. And just as a lion might occasionally depart from its normal behaviour - to kill a cow instead of a wildebeest, or a human instead of a zebra - so a pathogen can shift to a new target. Aberrations occur. When a pathogen leaps from an animal into a person, and succeeds in establishing itself as an infectious presence, sometimes causing illness or death, the result is a zoonosis. It's a mildly technical term, zoonosis, unfamiliar to most people, but it helps clarify the biological complexities behind the ominous headlines about swine flu, bird flu, Sars, emerging diseases in general, and the threat of a global pandemic. It's a word of the future, destined for heavy use in the 21st century. Ebola and Marburg are zoonoses. So is bubonic plague. So was the so-called Spanish influenza of 1918-1919, which had its source in a wild aquatic bird and emerged to kill as many as 50 million people. All of the human influenzas are zoonoses. As are monkeypox, bovine tuberculosis, Lyme disease, West Nile fever, rabies and a strange new affliction called Nipah encephalitis, which has killed pigs and pig farmers in Malaysia. Each of these zoonoses reflects the action of a pathogen that can "spillover", crossing into people from other animals. Aids is a disease of zoonotic origin caused by a virus that, having reached humans through a few accidental events in western and central Africa, now passes human-to-human. This form of interspecies leap is not rare; about 60% of all human infectious diseases currently known either cross routinely or have recently crossed between other animals and us. Some of those - notably rabies - are familiar, widespread and still horrendously lethal, killing humans by the thousands despite centuries of efforts at coping with their effects. Others are new and inexplicably sporadic, claiming a few victims or a few hundred, and then disappearing for years. Zoonotic pathogens can hide. The least conspicuous strategy is to lurk within what's called a reservoir host: a living organism that carries the pathogen while suffering little or no illness. When a disease seems to disappear between outbreaks, it's often still lingering nearby, within some reservoir host. A rodent? A bird? A butterfly? A bat? To reside undetected is probably easiest wherever biological diversity is high and the ecosystem is relatively undisturbed. The converse is also true: ecological disturbance causes diseases to emerge. Shake a tree and things fall out. Michelle Barnes is an energetic, late 40s-ish woman, an avid rock climber and cyclist. Her auburn hair, she told me cheerily, came from a bottle. It approximates the original colour, but the original is gone. In 2008, her hair started falling out; the rest went grey "pretty much overnight". This was among the lesser effects of a mystery illness that had nearly killed her during January that year, just after she'd returned from Uganda. Her story paralleled the one Jaap Taal had told me about Astrid, with several key differences - the main one being that Michelle Barnes was still alive. Michelle and her husband, Rick Taylor, had wanted to see mountain gorillas, too. Their guide had taken them through Maramagambo Forest and into Python Cave. They, too, had to clamber across those slippery boulders. As a rock climber, Barnes said, she tends to be very conscious of where she places her hands. No, she didn't touch any guano. No, she was not bumped by a bat. By late afternoon they were back, watching the sunset. It was Christmas evening 2007. They arrived home on New Year's Day. On 4 January, Barnes woke up feeling as if someone had driven a needle into her skull. She was achy all over, feverish. "And then, as the day went on, I started developing a rash across my stomach." The rash spread. "Over the next 48 hours, I just went down really fast." By the time Barnes turned up at a hospital in suburban Denver, she was dehydrated; her white blood count was imperceptible; her kidneys and liver had begun shutting down. An infectious disease specialist, Dr Norman K Fujita, arranged for her to be tested for a range of infections that might be contracted in Africa. All came back negative, including the test for Marburg. Gradually her body regained strength and her organs began to recover. After 12 days, she left hospital, still weak and anaemic, still undiagnosed. In March she saw Fujita on a follow-up visit and he had her serum tested again for Marburg. Again, negative. Three more months passed, and Barnes, now grey-haired, lacking her old energy, suffering abdominal pain, unable to focus, got an email from a journalist she and Taylor had met on the Uganda trip, who had just seen a news article. In the Netherlands, a woman had died of Marburg after a Ugandan holiday during which she had visited a cave full of bats. Barnes spent the next 24 hours Googling every article on the case she could find. Early the following Monday morning, she was back at Dr Fujita's door. He agreed to test her a third time for Marburg. This time a lab technician crosschecked the third sample, and then the first sample. The new results went to Fujita, who called Barnes: "You're now an honorary infectious disease doctor. You've self-diagnosed, and the Marburg test came back positive." The Marburg virus had reappeared in Uganda in 2007. It was a small outbreak, affecting four miners, one of whom died, working at a site called Kitaka Cave. But Joosten's death, and Barnes's diagnosis, implied a change in the potential scope of the situation. That local Ugandans were dying of Marburg was a severe concern - sufficient to bring a response team of scientists in haste. But if tourists, too, were involved, tripping in and out of some python-infested Marburg repository, unprotected, and then boarding their return flights to other continents, the place was not just a peril for Ugandan miners and their families. It was also an international threat. The first team of scientists had collected about 800 bats from Kitaka Cave for dissecting and sampling, and marked and released more than 1,000, using beaded collars coded with a number. That team, including scientist Brian Amman, had found live Marburg virus in five bats. Entering Python Cave after Joosten's death, another team of scientists, again including Amman, came across one of the beaded collars they had placed on captured bats three months earlier and 30 miles away. "It confirmed my suspicions that these bats are moving," Amman said - and moving not only through the forest but from one roosting site to another. Travel of individual bats between far-flung roosts implied circumstances whereby Marburg virus might ultimately be transmitted all across Africa, from one bat encampment to another. It voided the comforting assumption that this virus is strictly localised. And it highlighted the complementary question: why don't outbreaks of Marburg virus disease happen more often? Marburg is only one instance to which that question applies. Why not more Ebola? Why not more Sars? In the case of Sars, the scenario could have been very much worse. Apart from the 2003 outbreak and the aftershock cases in early 2004, it hasn't recurred. . . so far. Eight thousand cases are relatively few for such an explosive infection; 774 people died, not 7 million. Several factors contributed to limiting the scope and impact of the outbreak, of which humanity's good luck was only one. Another was the speed and excellence of the laboratory diagnostics - finding the virus and identifying it. Still another was the brisk efficiency with which cases were isolated, contacts were traced and quarantine measures were instituted, first in southern China, then in Hong Kong, Singapore, Hanoi and Toronto. If the virus had arrived in a different sort of big city - more loosely governed, full of poor people, lacking first-rate medical institutions - it might have burned through a much larger segment of humanity. One further factor, possibly the most crucial, was inherent in the way Sars affects the human body: symptoms tend to appear in a person before, rather than after, that person becomes highly infectious. That allowed many Sars cases to be recognised, hospitalised and placed in isolation before they hit their peak of infectivity. With influenza and many other diseases, the order is reversed. That probably helped account for the scale of worldwide misery and death during the 1918-1919 influenza. And that infamous global pandemic occurred in the era before globalisation. Everything nowadays moves around the planet faster, including viruses. When the Next Big One comes, it will likely conform to the same perverse pattern as the 1918 influenza: high infectivity preceding notable symptoms. That will help it move through cities and airports like an angel of death. The Next Big One is a subject that disease scientists around the world often address. The most recent big one is Aids, of which the eventual total bigness cannot even be predicted - about 30 million deaths, 34 million living people infected, and with no end in sight. Fortunately, not every virus goes airborne from one host to another. If HIV-1 could, you and I might already be dead. If the rabies virus could, it would be the most horrific pathogen on the planet. The influenzas are well adapted for airborne transmission, which is why a new strain can circle the world within days. The Sars virus travels this route, too, or anyway by the respiratory droplets of sneezes and coughs - hanging in the air of a hotel corridor, moving through the cabin of an aeroplane - and that capacity, combined with its case fatality rate of almost 10%, is what made it so scary in 2003 to the people who understood it best. Human-to-human transmission is the crux. That capacity is what separates a bizarre, awful, localised, intermittent and mysterious disease (such as Ebola) from a global pandemic. Have you noticed the persistent, low-level buzz about avian influenza, the strain known as H5N1, among disease experts over the past 15 years? That's because avian flu worries them deeply, though it hasn't caused many human fatalities. Swine flu comes and goes periodically in the human population (as it came and went during 2009), sometimes causing a bad pandemic and sometimes (as in 2009) not so bad as expected; but avian flu resides in a different category of menacing possibility. It worries the flu scientists because they know that H5N1 influenza is extremely virulent in people, with a high lethality. As yet, there have been a relatively low number of cases, and it is poorly transmissible, so far, from human to human. It'll kill you if you catch it, very likely, but you're unlikely to catch it except by butchering an infected chicken. But if H5N1 mutates or reassembles itself in just the right way, if it adapts for human-to-human transmission, it could become the biggest and fastest killer disease since 1918. It got to Egypt in 2006 and has been especially problematic for that country. As of August 2011, there were 151 confirmed cases, of which 52 were fatal. That represents more than a quarter of all the world's known human cases of bird flu since H5N1 emerged in 1997. But here's a critical fact: those unfortunate Egyptian patients all seem to have acquired the virus directly from birds. This indicates that the virus hasn't yet found an efficient way to pass from one person to another. Two aspects of the situation are dangerous, according to biologist Robert Webster. The first is that Egypt, given its recent political upheavals, may be unable to staunch an outbreak of transmissible avian flu, if one occurs. His second concern is shared by influenza researchers and public health officials around the globe: with all that mutating, with all that contact between people and their infected birds, the virus could hit upon a genetic configuration making it highly transmissible among people. "As long as H5N1 is out there in the world," Webster told me, "there is the possibility of disaster. . . There is the theoretical possibility that it can acquire the ability to transmit human-to-human." He paused. "And then God help us." We're unique in the history of mammals. No other primate has ever weighed upon the planet to anything like the degree we do. In ecological terms, we are almost paradoxical: large-bodied and long-lived but grotesquely abundant. We are an outbreak. And here's the thing about outbreaks: they **end**. In some cases they end after many years, in others they end rather soon. In some cases they end gradually, in others they end with a crash. In certain cases, they end and recur and end again. Populations of tent caterpillars, for example, seem to rise steeply and fall sharply on a cycle of anywhere from five to 11 years. The crash endings are dramatic, and for a long while they seemed mysterious. What could account for such sudden and recurrent collapses? One possible factor is infectious [from] disease, and viruses in particular.

## Small Farmers

#### Small farmers get caught in the vicious cycle – industrial ag drives out everyone but big business

Kwa 1 [(Aileen, trade analyst with Focus on the Global South, a policy research and activist organization) “Agriculture in Developing Countries: Which Way Forward” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

How does agricultural industrialization and production for the export market lead to the uprooting and destruction of small farmers while benefiting the large farms? According to Shiva, agricultural industrialization and exports increases single commodity harvests. With all farmers growing the same commodity over large areas, the prices farmers receive from their crops come down, while the costs of inputs which are imported have been on an upward spiral. As a result, farmers’ profit margins get drastically narrowed. As costs of production increase, farmers experience a cost-price squeeze. In this process, only the larger farms can survive. The market is such that the costs for small farmers to use the high input system are larger than for big farmers. Poor farmers cannot afford to buy fertilizer and inputs in volume. Big growers get discounts for large purchases. Poor farmers cannot hold out for the best price for their crops, while larger farmers whose circumstances are less desperate can. Big farmers can afford to pay for irrigation services, which may not be within reach of small farmers.

## Econ

#### Greater production is key to econ, which independently solves poverty.

Pennesi 12 [Evan Pennisi. “Agriculture Creates an Economic Future for Developing Countries.” Global Edge. 12/12/2012. <http://globaledge.msu.edu/blog/post/1400/agriculture-creates-an-economic-future-for-developing-countries>] AJ

Agriculture has been an essential industry for nearly all major economies in the world. These countries use agriculture to drive international trade and create jobs. In the United States, agriculture is one of the most export dependent sectors of the economy with one-third of US agricultural production exported annually. Developing countries have realized the importance of creating economic growth through agricultural production and exports. With an increasing global population, agriculture has provided emerging economies opportunities for growth and integration into the global economic picture. Over the past few years, global agricultural output has grown by 2.6 percent, led by growth in the emerging economies of Brazil, Russia, India, and China. According to the OECD, output in developing countries is expected to grow each year, resulting in a continual increase in their share of global production. Emerging economies have used their growth in agriculture as a way to strengthen international trade relationships. Brazil has become the world’s largest food exporter and has become a critical trade partner for many countries such as China, the world’s largest food consumer. Agriculture has proven to be a crucial industry for countries looking to expand their presence in the international trade marketplace. Trade benefits are just one positive by-product of a strong agricultural industry. Less developed countries are also using agriculture to create an economic future and to reduce the poverty that has stricken these countries. Many experts agree that the economic development prospects of Africa depend on an efficient and sustainable agricultural industry. In several African countries, food insecurity has been traced to low agricultural productivity despite vast arable land, good agro-ecological conditions, and water for irrigation. The path to unlocking prosperity in Africa lies in promoting effective agribusiness strategies and receiving capital investments from business abroad. If Africa is able to turn-around its agriculture industry, the International Monetary Fund projects a large boost in economic growth between now and 2020. For trade reasons and economic development opportunities, agriculture is one of the most important industries across the world for many countries. Moving forward, agriculture will remain a critical industry for sustainable development as production must keep pace with the expanding global population. This will not be an easy feat for agribusinesses and will require collaboration among small farmers worldwide and multinational agribusinesses. However, great challenges provide great opportunity, and there’s no doubt that agriculture can pave the way for growth in the global economy.

# Substance blox

## Econ DA

### Top Level

#### We don’t destroy agriculture, only reform it to prioritize the environment – they need to win that the net yields are lower for organic farming to win a link to the disad which they haven’t proven

#### Export focused agriculture has made economies heavily dependent and unstable - a shift is key to balanced and sustainable growth which turns the DA – reject their arguments since they’re rooted in a logic of colonialism

Timms 8 [(Benjamin F. Timms, Social Sciences Department, California Polytechnic State University) “Development theory and domestic agriculture in the Caribbean: recurring crises and missed opportunities” Caribbean Geography 2008 15(2)] AT

The profits of the manufacturing sector were then squandered on imported products instead of being reinvested and development did not spread from sector to sector as Lewis had proposed (Demas, 1975). The results were disarticulated economies with a lack of local markets, low wages, and increasingly dependent on foreign capital, foreign markets, and foreign imports (de Janvry, 1981; A?'line, 1984). Radical Reprise: the Plantation School and the promotion of domestic agriculture The lacklustre results of the application of Lewis' theories were accentuated by high unemployment and lack ofimprovement for the majority ofthe populace. Itwas time for a populist response: 'Thirty years later, ifyou look at the evidence, all ofthis feverish activity in winning capital and entrepreneurship from abroad, appears now to have been an enduring futility'. (Best, 1976: 2). A growing cadre of Caribbean economists during the 1960s critically attacked Lewis' industrialisation-by-invitation model of development, which was blamed for growing foreign dependence that was antithetical with their struggle for greater economic autonomy (Girvan & Jefferson, 1971; Blackman, 1980; Bernal et al., 1984). Cultivated by such Caribbean economists as Lloyd Best, Norman Girvan, George Beckford, and Clive Y. Thomas, this group became known as the Plantation School due to their analysis of the plantation economy, dermed as situations where: 'the internal and external dimensions of the plantation system dominate the country's economic, social, and political structure and its relations with the rest o f the world'. (Beckford, 1972: 12). Deeply embedded in the plantation economy was the continued legacy of the colonial era whereby Caribbean islands remained subservient to foreign capitalist economies (Levitt & Best, 1975). The Plantation School pinned the continued foreign dependence of the region on Lewis and his influence on post-war industrialisation (Demas, 1975). The main criticism of Lewis, claimed the model, came from an alien historical context (classical theories of Western Europe) and, therefore, failed to see the structural obstacles imposed on the Caribbean that disallowed an internalising of economic growth and reinforced dependency on the metropole (Bernal et aI., 1984; Levitt & Best, 1975). The arrival of these Caribbean dependistas occurred during the era of independence for many of the islands of the Caribbean (Conway, 1998). The hope was that through independence the Caribbean could break dependence on the metropole by fighting foreign capital and control and concentrating on the structural problems of the domestic economy through resource allocation tow,ard domestic production. Creating more self-sufficient development would lead to balanced growth whereby: '[t]he process of capital accumulation becomes internally driven - that is, based on the national market with exports as an extension o f production for domestic use'. (Bernal et al., 1984: 72). For domestic agriculture this required breaking the plantation legacy of a perpetual reliance on imported foodstuffs for consumption, paid for by earnings from exports. In a principle reminiscent o f Lewis, Beckford claimed Without responsive food production the export earnings will just be frittered away on food imports, and whether the country is better or worse off will depend on the terms of trade between exports and food imports'. (Beckford, 1972: 189). The small fanner was important to achieving the goal of agricultural production for the domestic market as they were argued to be more productive than the plantations due to the utilisation of a larger percentage of their land in diversified production (Beckford, 1968; 1975; Williams, 1970; Marshall, 1985). Land redistribution from plantations to small farmers would increase production for the domestic market and lessen the dependence on volatile agricultural exports. Further, expanding the small farm sector would provide livelihood opportunities for the surplus labour which was not being drawn into the manufacturing sector as readily as Lewis had hoped (McDonald, 1980). In order for the small farming sector to deliver these benefits it would have to be provided with support services and initial protection from cheap imports as they built productive capacity. The Plantation School theorists proposed access to adequate land of good quality, the diffusion of technical knowledge, availability ofcapital for investment, subsidies, and tariff protection to achieve this support (Beckford, 1968; Bernal et al., 1984). For the first time theory was linked with policy in an attempt to increase agricultural development for the domestic market. Examples included the creation of the Caribbean Agricultural Research and Development Institute [CARDI] in 1975 to promote diffusion o f technical knowledge to small farmers through research and extension services, and the founding of the Caribbean Development Bank [CDB] in 1969 to provide capital for investment in agricultural development (Axline, 1984). The Plantation School's treatment of domestic agriculture had similarities with the 1897 British Royal West Indies Commission recommendation in supporting small farmers. Further, they shared Lewis' belief that agricultural production for the home market was necessary so that profits would not disappear through adverse terms of trade for imported foodstuffs, albeit they had different ideas on how this should be achieved. A poignant example was Jamaica's attempt at 'democratic socialism' under Michael Manley (Conway, 1998). Rising oil prices, decreased export revenue due to global recession, and soaring imported food prices in the mid-1970s stimulated the promotion of domestic agricultural programmes along the lines of the Plantation School's prescriptions, with a resultant increase in domestic food production (Manley, 1982; Weis, 2004; Witter, 2004). Unfortunately, while the oil crisis offered the opportunity to implement the Plantation School's theories, the experiment of promoting domestic agriculture was short-lived as external factors forced the transition from increased self-sufficiency to greater depend­ ence on the world market (Manley, 1982; Thomas, 1989; Weis, 2004). The oil crisis of the 1970s and subsequent global recession ofthe 1980s created severe fiscal crises for many states in the Caribbean, which opened the door for the imposition of a new economic policy which eroded the gains of the Plantation School's advancements (MandIe, 1982; Deere, 1990). Retrenchment and Retreat: Neoliberalism and the challenge to domestic agriculture Entering the 1980s Caribbean economies were faced with severe pressures resulting from high prices for oil and imported commodities, low prices for exports, stagnant or declin­ ing economic growth rates, and exploding national debt burdens (Harker, 1989). With several Latin American countries facing default on their debt, world financial institutions, primarily the International Monetary Fund [IMF], formulated policies to stabilise the global financial system through fiscal austerity. Termed Structural Adjustment Programmes [SAPs], conditions were placed on renegotiating debt and the approval of new loans which sought to reduce state expenditures and raise revenues to fulfil debt obli­ gations. These conditions commonly applied supply-side policies to raise revenues, such as controlling wages and devaluing the currency in order to lower the market price for exports. Theoreticallythiswouldraisedemandforexportsabroadandstimulatefurther production. To reduce state expenditures public services were cut and government staff­ ing reduced, fees for public services raised and taxes increased, and subsidies removed (Deere, 1990; Gayle, 1998; Klak, 1998). While efforts at fiscal austerity are indeed sensible, the timing and speed with which the IMF imposed these conditions on countries often had the opposite effect and created political crisis for governments as their citizens bore the brunt of rising costs, fewer public services, a decline in the productive capacity ofthe economy, and a resultant deterioration in the quality oflife for a vast majority ofthe population. The initial fiscal austerity measures had a negative effect on agricultural production for the domestic market as cuts in government spending gutted agricultural research, development, and extension services (Weis, 2004), effectively reversing the programmes created during the Plantation School era (Deep Ford & Rawlins, 2007). IMF policies, concerned about inflation, raised domestic interest rates to such a high degree, from 20- 40 percent, that neither businesses nor farmers were able to obtain capital for productive investment (Stiglitz, 2003). However, in what was termed the Washington Consensus and is now commonly referred to as neoliberalism, the IMF went beyond its stated mission of maintaining global economic stability through fiscal' austerity and included conditionalities promoting the ideology of laissez faire economics through privatisation and trade liberalisation. Claiming Caribbean economies were stifled by the inefficiencies of protectionism implemented during the era of the Plantation School's influence, the neoliberal agenda believed liberalised trade based dn comparative advantage would create competitively efficient economies and raise global wealth with trickle-down benefits for all (Stiglitz, 2003; Weis, 2004). Begun in the 1980s, and accelerated in the 1990s, publicly-owned enterprises were privatised and protectionist trade policies scaled-back in the indebted countries. The reduction of subsidies and trade barriers sought to create an environment whereby highly competitive producers excel while those less productive would be assim­ ilated into other competitive sectors of the economy. Domestic agriculture in the Caribbean proved to be at a disadvantage competitively when pitted against the industrialised agricultural sectors of North America and Europe - which were protected and supported by the very trade barriers and subsidies the neoliberal agenda derided. Any concerns about food security were answered with the availability of cheap and (assumed) stable imports, which stands in stark contrast to the theories ofboth Lewis and the Planta- I' tion School. The acceptance of this food security strategy has even contributed, to the decrease in the proportion of foreign assistance devoted to agricultural deveiopment; from 18 percent of assistance budgets in 1979 to 2.9 percent in 2006 (Walt, 2008). Critics have warned that relying on cheap imports is a short-term strategy whereby once agricultural subsidies in the North America and Europe are eased the cost of imported food would rise accordingly (Weis, 2004). In the meantime nations lose domestic producers, creating increased unemployment and a populace less able to afford any rise in costs. The recipient ofthe Nobel Prize in Economics, Joseph Stiglitz, pointed out this failure: 'Trade liberalization is supposed to enhance a country's income by forcing resources to move from less productive uses to more productive uses; as economists would say, utilizing comparative advantage. But moving re­ sources from low-productivity uses to zero productivity does not enrich a country, and this is what happened aU too often under IMF programmes'. (Stiglitz, 2003: 59, italics in original). In the Caribbean, cheap food imports have flooded domestic markets, damaging the increasingly unprotected and unsubsidised local agricultural sectors and biasing domestic tastes toward foreign goods while leaving the region vulnerable to the vagaries of the international market (Timms, 2006; Deep Ford & Rawlins, 2007; Weis, 2004; Iqbal, 1993). Just such a scenario victimised the Jamaican dairy industry when structural adjustment programmes in the I990s liberalised importation of subsidised powdered milk from the United States and Europe. Domestic milk production dropped from 38.8 million litres ofmilk in 1992 to 14 million litres in 2007, the lattelj representing only 10 percent ofthe milk consumed on the island (Myers Jr., 2008). I" Proponents of trade liberalisation acknowledged that while local dairy farmers suffered, 'poor children could get milk more cheaply' (Stiglitz, 2003: 5). Yet this qualification overlooks the fact that a decline in a country's productive capacity makes it more difficult for the poor to escape poverty. Further, the forewarnings of Weis (2004) became a reality when the European Union lowered export subsidies for milk which, in combination with the rise of demand in China and India, resulted in the price of an imported metric ton of powdered milk to increase from US$2,200 in 2006 to over US$5,000 in 2008 (Myers Jr., 2008). In response to the scarcity of milk on the shelves of supermarkets the Government of Jamaica has announced plans to import dairy cows and begin the rebuilding of the domestic dairy industry. For the Caribbean region the effects of neoliberalism have seen a growing agricultural trade deficit due to low prices for export commodities and an increasing food import bill (Table 1) (Thomas, 1993; Deep Ford & Rawlins, 2007; World Bank, 2008). The increasing reliance on imports and damaged productive capacity of the domestic agricultural sector make the region even more susceptible to volatility in global commodity markets. Further, trade liberalisation has resulted in a decline in tariff revenues, which have traditionally been a significant source of revenue for Caribbean governments (Khaira & Deep Ford, 2007; Witter, 2004). Critics of the macroeconomic 'one size fits all' approach of neoliberal structural adjustment programmes point out the lack of historical and local context in the focus on short-term balance of payment difficulties and trade liberalisation without due regard to the severe long-term negative impacts they have on balanced development (Klak, 1998; Stiglitz, 2003; Karagiannis, 2004; Weis, 2004; Conway & Timms, 2003). In addition, neoliberal policies have been asymmetrically applied whereby the industrialised countries of North America and Europe retain subsidies and trade barriers while developing countries are forced to dismantle their own in the name offiscal austerity and liberalised markets. This creates unfair trade that undermines the comparative advantage of farmers in the Caribbean on both the global and domestic levels (Conway & Timms, 2003). Further, it denies the fact that development in the industrialised countries began with protectionism and only opened up to free trade, albeit selectively and incompletely, once their industries were in an advantageous competitive position (Deep Ford & Rawlins, 2007; Stiglitz, 2003).

### Poverty Turn

#### Neoliberal loan packages have created systems of economic dependence and mass poverty for local farmers.

Kwa 01 [Aileen Kwa. “Agriculture in Developing Countries: Which Way Forward?” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

The structure of agricultural production in developing countries has radically changed in the last two decades. Since the late 60s and 70s, the World Bank and its various agricultural research institutes have actively promoted the adoption of industrial (high chemical input) agricultural methods such as the Green Revolution ‘miracle’ seeds, promising landfall yields. These high technology methods were expected to benefit all farmers, including the poor. Since yields would increase, incomes were also expected to increase. However, the heavy dependence on imported inputs could not be sustained economically by developing countries. This was compounded, in the 1970s and 1980s, by the oil crisis and the debt crisis. The economic and financial crisis in developing countries led to the proliferation of loan packages from the international financial institutions. Structural adjustment policies were then introduced as a condition for loans borrowed by countries. Since the 1980s, close to 100 countries have been forced to take on structural adjustment packages. The policies included on the one hand forced liberalization, and on the other, the conversion of domestic agricultural production for exports. Over the last two decades, the experience of small farmers from Central to South America, Africa and Asia have been strikingly similar. Many have been pressured to switch from diverse traditional polycultures to monocultures for overseas markets. For example, the provision of extension services and credit were often conditioned upon farmers accepting the new technologies in export crops that were promoted. Farmers have been likewise forced to switch to export crops when local prices in staples and traditional crops have plummeted as a result of cheap subsidized imports often from the industrialized countries flooding the local markets. For the majority of small farmers, the process has been one of systematic impoverishment. Many have even been squeezed out of farming altogether. Instead of abating food scarcity, which has always been the reasoning for public investment in agricultural technology and hybrid seeds, food surpluses are increasing on the world market, yet ironically, for those most in need, hunger and food insecurity remains more of a problem.

## Sustainability

### Sustainability---Warming

#### 1. Warming---

#### A) Our Ho evidence indicates that organic ag is key to adapt to warming since multicrops and other techniques to making crops resilient to temperature changes and extreme weather

#### B) Warming is coming now

Richard Schiffman 9/27/13, environmental writer @ The Atlantic citing the Fifth Intergovernmental Panel on Climate Change, “What Leading Scientists Want You to Know About Today's Frightening Climate Report,” The Atlantic, http://www.theatlantic.com/technology/archive/2013/09/leading-scientists-weigh-in-on-the-mother-of-all-climate-reports/280045/

The polar icecaps are melting faster than we thought they would; seas are rising faster than we thought they would; extreme weather events are increasing. Have a nice day! That’s a less than scientifically rigorous summary of the findings of the Fifth Intergovernmental Panel on Climate Change (IPCC) report released this morning in Stockholm.¶ Appearing exhausted after a nearly two sleepless days fine-tuning the language of the report, co-chair Thomas Stocker called climate change “the greatest challenge of our time," adding that “each of the last three decades has been successively warmer than the past,” and that this trend is likely to continue into the foreseeable future.¶ Pledging further action to cut carbon dioxide (CO2) emissions, U.S. Secretary of State John Kerry said, "This isn’t a run of the mill report to be dumped in a filing cabinet. This isn’t a political document produced by politicians... It’s science."¶ And that science needs to be communicated to the public, loudly and clearly. I canvassed leading climate researchers for their take on the findings of the vastly influential IPCC report. What headline would they put on the news? What do they hope people hear about this report?¶ When I asked him for his headline, Michael Mann, the Director of the Earth Systems Science Center at Penn State (a former IPCC author himself) suggested: "Jury In: Climate Change Real, Caused by Us, and a Threat We Must Deal With."¶ Ted Scambos, a glaciologist and head scientist of the National Snow and Ice Data Center (NSIDC) based in Boulder would lead with: "IPCC 2013, Similar Forecasts, Better Certainty." While the report, which is issued every six to seven years, offers no radically new or alarming news, Scambos told me, it puts an exclamation point on what we already know, and refines our evolving understanding of global warming.¶ The IPCC, the indisputable rock star of UN documents, serves as the basis for global climate negotiations, like the ones that took place in Kyoto, Rio, and, more recently, Copenhagen. (The next big international climate meeting is scheduled for 2015 in Paris.) It is also arguably the most elaborately vetted and exhaustively researched scientific paper in existence. Founded in 1988 by the United Nations and the World Meteorological Organization, the IPCC represents the distilled wisdom of over 600 climate researchers in 32 countries on changes in the Earth’s atmosphere, ice and seas. It endeavors to answer the late New York mayor Ed Koch’s famous question “How am I doing?” for all of us. The answer, which won’t surprise anyone who has been following the climate change story, is not very well at all. ¶ It is now 95 percent likely that human spewed heat-trapping gases — rather than natural variability — are the main cause of climate change, according to today’s report. In 2007 the IPCC’s confidence level was 90 percent, and in 2001 it was 66 percent, and just over 50 percent in 1995. ¶ What’s more, things are getting worse more quickly than almost anyone thought would happen a few years back.¶ “If you look at the early IPCC predictions back from 1990 and what has taken place since, climate change is proceeding faster than we expected,” Mann told me by email. Mann helped develop the famous hockey-stick graph, which Al Gore used in his film “An Inconvenient Truth” to dramatize the sharp rise in temperatures in recent times. ¶ Mann cites the decline of Arctic sea ice to explain : “Given the current trajectory, we're on track for ice-free summer conditions in the Arctic in a matter of a decade or two... There is a similar story with the continental ice sheets, which are losing ice — and contributing to sea level rise — at a faster rate than the [earlier IPCC] models had predicted.”¶ But there is a lot that we still don’t understand. Reuters noted in a sneak preview of IPCC draft which was leaked in August that, while the broad global trends are clear, climate scientists were “finding it harder than expected to predict the impact in specific regions in coming decades.”¶ From year to year, the world’s hotspots are not consistent, but move erratically around the globe. The same has been true of heat waves, mega-storms and catastrophic floods, like the recent ones that ravaged the Colorado Front Range. There is broad agreement that climate change is increasing the severity of extreme weather events, but we’re not yet able to predict where and when these will show up. ¶ “It is like watching a pot boil,” Danish astrophysicist and climate scientist Peter Thejll told me. “We understand why it boils but cannot predict where the next bubble will be.”¶ There is also uncertainty about an apparent slowdown over the last decade in the rate of air temperature increase. While some critics claim that global warming has “stalled,” others point out that, when rising ocean temperatures are factored in, the Earth is actually gaining heat faster than previously anticipated.¶ “Temperatures measured over the short term are just one parameter,” said Dr Tim Barnett of the Scripps Institute of Oceanography in an interview. “There are far more critical things going on; the acidification of the ocean is happening a lot faster than anybody thought that it would, it’s sucking up more CO2, plankton, the basic food chain of the planet, are dying, it’s such a hugely important signal. Why aren’t people using that as a measure of what is going on?”¶ Barnett thinks that recent increases in volcanic activity, which spews smog-forming aerosols into the air that deflect solar radiation and cool the atmosphere, might help account for the temporary slowing of global temperature rise. But he says we shouldn’t let short term fluctuations cause us to lose sight of the big picture.¶ The dispute over temperatures underscores just how formidable the IPCC’s task of modeling the complexity of climate change is. Issued in three parts (the next two installments are due out in the spring), the full version of the IPCC will end up several times the length of Leo Tolstoy’s epic War and Peace. Yet every last word of the U.N. document needs to be signed off on by all of the nations on earth. ¶ “I do not know of any other area of any complexity and importance at all where there is unanimous agreement... and the statements so strong,” Mike MacCracken, Chief Scientist for Climate Change Programs, Climate Institute in Washington, D.C. told me in an email. “What IPCC has achieved is remarkable (and why it merited the Nobel Peace Prize granted in 2007).”¶ Not surprisingly, the IPCC’s conclusions tend to be “conservative by design,” Ken Caldeira, an atmospheric scientist with the Carnegie Institution’s Department of Global Ecology told me:

#### C) Warming destroys agriculture – adapting agriculture systems is crucial to avoid massive global conflict

Ginsborg et al. 12 – Mikkel Funder, Signe Marie Cold-Ravnkilde and Ida Peters Ginsborg - in collaboration with Nanna Callisen Bang, Denmark Institute for International Studies, 2012, "ADDRESSING CLIMATE CHANGE AND CONFLICT IN DEVELOPMENT COOPERATION EXPERIENCES FROM NATURAL RESOURCE MANAGEMENT" www.diis.dk/graphics/Publications/Reports2012/RP2012-04-Addressing-climate-change\_web.jpg.pdf

2.2 Climate change as a conﬂict multiplier¶ Climate change is therefore best seen as a conﬂict multiplier, rather than as a major direct cause of conﬂict in itself. Climate change may aggravate and extend the scope of existing conﬂicts, or trigger underlying and latent conﬂicts to break out into the open. ¶ Previous studies have identiﬁed a number of areas in which climate change may contribute to a worsening of conﬂicts (Brown & Crawford 2009). These include:¶ • Land and water access. Access and use rights to land are a key feature in most situations where climate change has contributed to natural resource conﬂicts so far. Climate change can intensify existing conﬂicts over land, as land becomes less fertile or is ﬂooded, or if existing resource sharing arrangements between diﬀerent users and land use practices are disrupted. In some parts of Africa, climate change may lead to a decline in available water resources of some 10–20% by the end of the century (op cit.). This may intensify existing competition for access to water at intra-state and/or subnational levels. • Food security. Reduced rainfall and rising sea levels may lead to a decline in agricultural production and a substantial loss of arable land in some parts of Africa. Reduced yields for own consumption and increasing domestic food prices may in some cases lead to civil unrest, and competition over access to land may intensify.¶ • Migration and displacement. In some cases, increased scarcity of and competition over access to water and arable land may contribute to internal or regional migration, and disasters such as ﬂoods may lead to temporary or long-term local displacement. This may in turn strengthen conﬂicts between host societies/communities and migrants looking for access to new land and resources. ¶ • Increasing inequality and injustice. Through processes such as the above, some population groups may be particularly hard hit, leading to increased inequality and a sense of injustice. This may intensify existing grievances and disputes between natural resource users and/or between resource users and outside actors such as governments – thereby increasing the risk and intensity of conﬂict.

### Sustainability---Peak Oil

#### Peak oil is coming now which guarantees the catastrophic collapse of industrial agriculture – non-uniques and turns the DA

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

Recently, there has been much speculation about the causes of higher oil prices, and continuing dis- cussion about the likelihood of whether or not prices will continue to rise. Commentary has focused on the war in Iraq and accompanying geopolitical instability in the Middle East; increasing dependence on Russia; governments in Latin American nationalizing their oil industries; and supply chain bottle necks such as refining capacity. However, the geological constraints on future energy supply, known as peak oil—the point at which oil production stops rising and begins an inevitable long-term decline—have received much less atten- tion. As noted in Fuelling A Food Crisis: The Impact of Peak Oil on Food Security: While the majority of constraints on access to oil could potentially be overcome through political or economic means, the geological reality of ever dwindling fossil-fuel supplies is non-negotiable. While it has taken 145 years to consume half of the 2-2.5 trillion barrels of conventional oil sup- plies generally regarded as the total available, it is likely that, given the huge increases of demand from China and India in particular, the other half will be largely consumed within the next 40 years. Some 98 percent of global crude oil comes from 45 nations, over half of which may already have peaked in oil production, including seven of the 11 OPEC nations. Major oil field discoveries fell to zero for the first time in 2003, while the excess capacity held by OPEC nations has dwindled, from an average of 30 percent to about 1 percent of global demand today. World oil and gas production is declining at an average of 4-6 percent a year, while demand is growing at 2-3 percent a year.2 Ironically, the present system of industrial agriculture is a major contributor to these problems. Agriculture is responsible for an estimated one-third of emissions that contribute to global warming and climate change. It is generally agreed that about 25 percent of the main greenhouse gas—carbon dioxide—is produced by agricultural pesticides and chemicals, and via deforestation and the burning of bio- mass. Most of the methane in the atmosphere comes from domestic ruminants, forest fires, wetland rice cultivation and waste products, while conventional tillage and fertilizer use account for 70 percent of the nitrous oxides.3 This set of conditions is rapidly destroying our shared heritage called the “commons”—that is, the planet’s natural resources necessary to grow food. And, although the revenge of nature itself may eventually force the end of the current global industrial agriculture model, the cost will most certainly be the destruction of millions of livelihoods and lives, scarce food supplies, and devastation to the planet’s natural systems. Given the potential for such catastrophe, it is critical to quickly restore and enhance food and fiber systems that are more regionally based, and that respect societies, cultures, and nature. GROWING FOOD ONCE EXPRESSED a “personal” relationship between human beings, wildlife and the earth. Successful farming was based on generations of accumulated knowledge about place: climate, land, water, soil and the organisms within it; mixing and rotating crops, seed saving, breeding, and recy- cling organic matter. Growing food was an intimate process; it involved farmer, land, and community, with the goal of sustaining that life-giving exchange in perpetuity. At the heart of the matter: a deep love of the land. Over the past several centuries, most food has primarily been grown locally for local community and family consumption. Until very recently, developing countries grew 90 percent of the food they con- sumed domestically and for small local markets.1 Over the centuries, local farmers developed seeds and used them collectively as a community to re-plant for the next harvest. They invented a variety of cultiva- tion methods, crops, and pest management systems that were unique to local ecosystems and cultures. Communities freely shared all local “commons”—water, labor, seeds, traditional knowledge and innova- tion—that were vital to food cultivation and the survival of stable communities. Natural resources were carefully nurtured to maintain an important balance between regional fish, fowl, and other wild creatures, and the needs of the community. As one United Nations Environment Program (UNEP) report observed: “In India, peasants grow over forty different crops on localities that have been cultivated for more than two thousand years without a drop in yields, yet have remained free of pests.”2 The report also attested to the benefits of agro-ecologi- cal approaches over millennia, citing practices of indigenous populations that are “based on ecological knowledge and understanding” and are “highly efficient and productive and inherently sustainable.” Cultures have successfully adapted to difficult environments with innovative techniques for irrigation, drainage, soil fertility, frost control, and disease management. In Central America, for example, ingenious raised-bed systems known variously as chiampas, waru waru, or tablones have withstood truly terrible geo- logical conditions and have successfully fed populations without ecological damage. Similarly, highly evolved, locally appropriate systems are found in Africa, the Andes region, South Asia, and many other places. All of these successful adaptations resulted from farmers’ intimate relations with the land, weather conditions, and unique local conditions. In this way, people fed themselves for millennia. Local, decentralized food production still provides millions of livelihoods around the world and pro- vides fresh, nutritious food direct from the land to the table without the stresses and expenses of long distance shipping. India’s wheat economy is a good example of this. Millions of Indian farmers grow over 6 billion tons of wheat per year. Leading food rights advocate Dr. Vandana Shiva explains the process in the IFG book Views From the South: A chain of traders (artis), bring wheat directly from the farm to the local shops. Most people buy fresh wheat from the local corner store (kirana) and then take it to the local mill operators (chakki wallas). It is estimated that over 2 million small neighborhood mills produce fresh flour. Additionally, flour is produced by women working in households. Shiva observes: “Less than 1 percent of flour carries a brand name because Indian consumers trust their own supervision of quality at the local mill better than a brand name attached to stale, packaged flour.” Small-scale, local food economies have successfully sustained millions of people for many centuries with little capital investment and infrastructure. Rather than technology and investment capital, people and natural resources (“natural capital”) are at the center of this system. Additionally, these centuries-old knowledge systems begat amazing food diversity. Traditional cultures enjoyed beautiful varieties of rice, potatoes, beans, corn, and other foods. Indeed, cultures were created and defined by the diversity of their foods. Annual festivals and seasonal celebrations of planting and harvesting helped ensure that the culture was imbued with nature-based practices over the centuries. radical shift to corporate control During the last century, a radical new approach to agriculture emerged. Instead of local farmers growing food locally for their own communities, a new highly centralized, global system of industrialized agricul- ture rapidly began replacing the local, decentralized small-scale food systems connected to traditional cul- tures, climates, geography, ecosystems, and other endemic factors. This model now represents the dominant paradigm for industrial, northern countries. Beginning with the Green Revolution, many developing countries began to adopt industrial agriculture practices as well. This industrial regime of the last few decades is characterized by excessive focus on the import and export of food, and is promoted and enforced by international institutions and agreements such as the World Bank, the International Monetary Fund (IMF), the World Trade Organization (WTO) and other regional and bilateral trade and investment agreements. Unlike the agreements of other international bureaucracies, such as those of the United Nations, the WTO’s agreements are legally binding and have strong enforcement capability. Thus, they have become the most important vehicles for implementing economic and also social policies across the world. Though the rules and policies of recent global agreements and institutions are negotiated between governments, they are largely crafted by large agribusiness corporations—the primary beneficiaries. A salient feature of these agreements is that food is treated as a commodity rather than as crucial for the survival of all humans. Given that food is a basic necessity of life, unlike other commodities such as tires or computers, many governments and civil society movements believe that such policies are griev- ously misguided. As Lori Wallach of Public Citizen puts it, “Food—like water—is not an optional prod- uct that consumers may choose to purchase: food is the basis of life. People without food die, while people without cars or tires walk and people without tin ore use local materials.”3 As such, many believe that governments have an obligation to ensure food as a basic human right. The result of this shift has been a loss of livelihoods for millions of farmers, and the depression of rural communities; an increase in hunger in many parts of the globe; compromised nutrition and safety of food; increased environmental destruction; and the control of food production and distribution by an ever-smaller number of giant global agribusinesses. (See Box 1.) These are some of the outcomes of this shift: ❖ Local self-reliant food systems that had provided food and livelihoods for millions, and a secure food supply, are rapidly being replaced by corporate control—often foreign corporations—over farm inputs, energy, crop commodity prices, food production, and marketing. These corporations value profits and export trade over the needs of local communities for food and sustainable products. ❖ Industrial agriculture eliminates diverse food production for local needs, replacing it with large scale monocultural production of one or two crops appropriate for export markets; thus, diminishing natural biodiversity—of micro organisms, plants, insects, and animals, and diminishing local food supply as well. ❖ Heavy use of industrial agricultural processes, including pesticides, chemical fertilizers and fossil fuel-based machinery are rapidly destroying the vitality of the soil, polluting and over-using scarce fresh water, polluting the air, and harming wildlife and humans. ❖ The corporate introduction of genetically modified organisms (GMOs) and plants further destroys biodiversity and brings unknown, potentially catastrophic dangers via new forms of biopollution. ❖ The export driven model of globalized agriculture requires a huge increase in transport infrastruc- tures —roads, ports, airports, energy grids—often constructed at the expense of nature and in defiance of global energy shortages. ❖ Massive shipments of agricultural commodities across great distances requires additional fossil fuel usage, refrigeration, packaging, etc. and fosters mobility of exotic plant and animal species, and the spread of pests, viruses, bacteria, and disease. ❖ Control over and accesstothe mostessential elements of life—thecommons—arebeingstrippedaway from local communities and given over to corporations (often via World Bank privatization schemes). ❖ Traditional knowledge of seeds, plants, and cultivation are being expropriated for profit, and patented by large corporations—a process known as “biopiracy.” ❖ Agriculture accounts for approximately 25 percent of carbon dioxide emissions; and 70 percent of nitrous oxide emissions.4 global macro effects The expansion of the industrial agriculture model affects everyone, whether they live in cities, suburban America, or the countryside in the global South or North. To illustrate, we offer examples below on how globalized industrial agriculture relates to two of the most pressing issues of our time: immigration and global warming. –9– part one The Roots of Migration The issue of immigration has dozens of countries in serious turmoil. The U.S. is no exception. Here, the raging debate about immigration is largely the result of globalized industrial agriculture, and trade agree- ments that embrace this model. Between 1990 and 2005, the number of migrants from Mexico and Central America living in the U.S. without authorization spiked from 2 million to an estimated 6.2 million. Many of these migrants could be called “NAFTA refugees.” The North American Free Trade Agreement (NAFTA), which went into effect in 1994, lifted barriers to “free” agricultural trade between North and South, with dire consequences. As part of the condition for joining NAFTA, Mexico was required to drastically change its Constitution and abandon the traditional ejido system of communal land and resource ownership. This is the system created after the Mexican Revolution of the early 20th century that made traditional farming in Mexico productive and viable. Mexico was also forced to dismantle a system that had provided a guaranteed floor price for corn for Mexican farmers, which had sustained over 3 million corn producers. As a result of NAFTA, Mexican farmers suddenly found themselves competing with an influx of cheap agricultural commodities produced by large-scale, heavily subsidized U.S. producers. Corn imports from the North grew 17-fold between 1993 and 2001 and accounted for 25 percent of Mexican corn consumption. This compared to a pre-NAFTA figure of 2 percent.5 Within a year of NAFTA’s passage, Mexican production of corn and other basic grains fell by 50 percent, and millions of peasant farmers lost a significant source of their incomes.6 Facing dire poverty in the Mexican countryside, millions of farmers migrated off their lands and made the wrenching decision to leave behind families and communities and head northward. Once in the United States, these migrants often found jobs in the fields, performing backbreaking work for poor pay and with- out basic rights. Thousands of others toil in industrial food processing plants, where conditions today resemble those depicted in The Jungle by Upton Sinclair at the end of the 19th century. Despite NAFTA’s record, the U.S. Congress approved a similar agreement with Central America in 2005 that is expected to have similar devastating effects on small farmers in those countries. Many of them will also likely attempt to seek economic opportunities in the United States. Similar stories could be told throughout the developing world; farmers everywhere are vulnerable to import competition, not only because of free trade agreements but also due to World Bank- and IMF-promoted cuts to all types of supports for small-scale agriculture, as this report will discuss. Climate Change/Peak Oil—Fatal Threats to Globalized Agriculture Another threat from globalized industrial agriculture is the role it plays in the rapid advancement of cli- mate change on the earth. In dozens of ways, from destruction of carbon-absorbing forests, to the massive over-use of fossil fuels for production and for transportation (upon which the entire model depends), climate change is directly furthered. One-eighth of the world oil supply is now used for transportation with a very high percentage of that being used for long distance shipment of food across oceans or continents. It has been widely quoted that the average plate of food on an American dinner table today has traveled more than 1,500 miles from source to plate. According to Edward Goldsmith, Europe’s leading ecological thinker, and publisher of The Ecologist, industrial agriculture bears overall responsibility for about 25 percent of the world’s carbon dioxide emissions, 60 percent of methane gas emissions, and 70-80 percent of nitrous oxide—all of them major greenhouse gasses contributing to climate change.7 Many climate scien- tists already predict hundreds more storms on the scale of Katrina or worse, and a rise in sea levels that could inundate thousands of miles of coastal farmlands in both North and South. Ironically, there is also a reverse kind of threat to the food supply within a global industrial agricul- ture system, in that we are now approaching an unprecedented shortage of oil and natural gas on the Earth, called “peak oil” by many scientists and even corporations and governments. When that shortage fully kicks-in—and some say it is doing so now—the entire global industrial agriculture system could be threatened with collapse, as it will not be able to maintain long distance shipping in the face of increasingly high energy costs. This could play havoc with food delivery globally and itself bring on a reversal of current trends.

## Land Efficiency DA

#### Pure land efficiency is a bad measure of growth – their studies just says agriculture

## Yields DA

### Top Level [2:00]

#### 1. The framing issue for this disad is that industrial ag is unsustainable which is terminable defense and makes yields completely irrelevant since it means the scenario is inevitable in the status quo – also turns the disad since even if yields are higher now, they will collapse later – this is a stronger link since it causes quick and sudden collapse of food which is more destabilizing than a gradual shift to organic agriculture. Specifically---

#### ---A) Industrial agriculture is causing starvation and food wars right now and soil depletion and land depletion makes it worse – regardless of yields, only local agriculture can help the 2 billion people starving in the status quo

Headley 5/12 [(Joshua, founder of Deep Green Resistance environmental movement) “BREAKDOWN: Industrial Agriculture” Deep Green Resistance May 12 2013] AT

In no other industry today is it more obvious to see the culmination of affects of social, political, economic, and ecological instability than in the global production of food. As a defining characteristic of civilization itself, it is no wonder why scientists today are closely monitoring the industrial agricultural system and its ability (or lack thereof) to meet the demands of an expanding global population. Amidst soil degradation, resource depletion, rising global temperatures, severe climate disruptions such as floods and droughts, ocean acidification, rapidly decreasing biodiversity, and the threat of irreversible climatic change, food production is perhaps more vulnerable today than ever in our history. Currently, as many as 2 billion people are estimated to be living in hunger – but that number is set to dramatically escalate, creating a reality in which massive starvation, on an inconceivable scale, is inevitable. With these converging crises, we can readily see within agriculture and food production that our global industrial civilization is experiencing a decline in complexity that it cannot adequately remediate, thus increasing our vulnerability to collapse. Industrial agriculture has reached the point of declining marginal returns – there may be years of fluctuation in global food production but we are unlikely to ever reach peak levels again in the foreseeable future. While often articulated that technological innovation could present near-term solutions, advocates of this thought tend to forget almost completely the various contributing factors to declining returns that cannot be resolved in such a manner. There is also much evidence, within agriculture’s own history, that a given technology that has the potential to increase yields and production (such as the advent of the plow or discovery of oil) tends to, over time, actually reduce that potential and significantly escalate the problem. Peak Soil A largely overlooked problem is soil fertility. [1] A civilization dependent on agriculture can only “sustain” itself and “progress,” for as long as the landbase and soil on which it depends can continue to thrive. The landscape of the world today should act as a blatant reminder of this fact. What comes to mind when you think of Iraq? Cedar forests so thick that sunlight never touches the ground? “The Fertile Crescent,” as this region is also known, is the cradle of civilization and if we take a look at it today we can quickly deduce that overexploitation of the land and soil is inherent to this way of life. The Sahara Desert also serves as a pressing example – a region once used by the Roman Empire for food cultivation and production. But this problem has not escaped our modern industrial civilization either, even despite some technological advances that have been successful at concealing it. The only thing we have genuinely been “successful” at is postponing the inevitable. Currently, industrial agriculture depletes the soil about a millimeter per year, which is ten times greater than the rate of soil formation. Over the last century, we have solved this problem by increasing the amount of land under cultivation and by the use of fertilizers, pesticides, and crop varieties. Industrial civilization has expanded so greatly, however, that we currently already use most of the world’s arable land for agriculture. To solve the problems of peak soil today, as we have previously, would require doubling the land currently used for cultivation at the cost of some of the worlds last remaining forests and grasslands – most notably the Amazon and the Sahel. Not only is this option impractical, given the current state of the climate, it is wholly insane. Another problem we face today is that more than a half-century of reliance on fertilizers and pesticides has severely reduced the level of organic matter in the soil. An advance in chemical fertilizers and/or genetic engineering of crops, while promising boosted yields in the near-term, will only further delay the problem while at the same time possibly introducing even greater health risks and other unforeseen consequences. Decreasing Yields & Reserve Stocks According to an Earth Policy Institute report in January, global grain harvests and stocks fell dangerously low in 2012 with total grain production down 75 million tons from the record year before. [2] Most of this decrease in production occurred as a result of the devastating drought that affected nearly every major agricultural region in the world. The United States – the largest producer of corn (the world’s largest crop) – has yet to fully recover from the drought last year and this is a cause for major concern. Overall, global grain consumption last year exceeded global production requiring a large dependence on the world’s diminishing reserve stocks. And this isn’t the first time it has happened – 8 out of the last 13 years have seen consumption exceed production. In an escalating ecological crisis this is likely to be the new “normal.” This fact, in itself, is a strong indication that industrial civilization is dangerously vulnerable to collapse. The issue here is two-fold: resource scarcity (industrial agriculture requires fossil fuels in every step of the process), soil degradation, and climate disruptions (droughts, floods, etc.) are severely reducing the yields of industrial agriculture; at the same time (and precisely because of those facts), we are becoming increasingly reliant on carryover reserve stocks of grains to meet current demands thus creating a situation in which we have little to no capacity to rebuild those stocks. As Joseph Tainter describes in The Collapse of Complex Societies, a society becomes vulnerable to collapse when investment in complexity begins to yield a declining marginal return. Stress and perturbation are common (and constant) features of all complex societies and they are precisely organized at high levels of complexity in order to deal with those problems. However, major, unexpected stress surges (which do occur given enough time) require the society to have some kind of net reserve, such as excess productive capacities or hoarded surpluses – without such a reserve, massive perturbations cannot be accommodated. He continues: “Excess productive capacity will at some point be used up, and accumulated surpluses allocated to current operating needs. There is, then, little or no surplus with which to counter major adversities. Unexpected stress surges must be dealt with out of the current operating budget, often ineffectually, and always to the detriment of the system as a whole. Even if the stress is successfully met, the society is weakened in the process, and made even more vulnerable to the next crisis. Once a complex society develops the vulnerabilities of declining marginal returns, collapse may merely require sufficient passage of time to render probable the occurrence of an insurmountable calamity.” [3] Current global reserve stocks of grains stand at approximately 423 million tons, enough to cover 68 days of consumption. As population and consumption levels continue to rise while productive capacities fall, we will be more and more dependent on these shrinking reserves making our ability to address future stresses to the system significantly low. Disappearance of the Arctic Sea Ice One such “insurmountable calamity,” may be quickly on the horizon. This week, senior US government officials were briefed at the White House on the danger of an ice-free Arctic in the summer within two years. One of the leading scientists advising the officials is marine scientist Professor Carlos Duante, who warned in early April: “The Arctic situation is snowballing: dangerous changes in the Arctic derived from accumulated anthropogenic green house gases lead to more activities conducive to further greenhouse gas emissions. This situation has the momentum of a runaway train.” [4] Over the last few years, the excessive melting occurring in the Arctic region due to rising global temperatures has altered the jet stream over North America, Europe, and Russia leading to the very unprecedented heat waves and droughts responsible for most of the declining returns in agricultural production in recent years. As the warming and melting continue, these extreme weather events will exponentially get worse. In addition, the melting of the sea ice will significantly raise sea level with the potential to displace more than 400 million people. The UK-based Arctic Methane Emergency Group recently released a public statement also indicating: “The weather extremes from last year are causing real problems for farmers, not only in the UK, but in the US and many grain-producing countries. World food production can be expected to decline, with mass starvation inevitable. The price of food will rise inexorably, producing global unrest and making food security even more of an issue.” [5] Social, Political, and Economic Instability No civilization can avoid collapse if it fails to feed its population, largely because continued pressures on the system will result in the disintegration of central control as global conflicts arise over scarce necessities. [6] This process can occur rapidly and/or through a gradual breakdown. A likely scenario of rapid collapse would be the breakout of a small regional nuclear war – such as between Pakistan and India – which would create a “nuclear winter” with massive global consequences. If that could be avoided, then the threat of collapse will likely be more gradual through the continued decrease of marginal returns on food and essential services. As these crises continue to increase in frequency and severity, their convergences will usher in a period of prolonged global unrest. [7] This was directly seen as a result of the 2007-08 grain crisis in which many countries restricted exports, prices skyrocketed, and food riots broke out in dozens of countries. Many of those countries were located within the Middle East and are credited as the fundamental circumstances that gave way to the Arab Spring in 2011. This year the food price index is currently at 210 – a level believed to be the threshold beyond which civil unrest is probable. Further, the UN’s Food and Agriculture Organization is already reporting record high prices for dairy, meat, sugar and cereals and also warns – due to the reduced grain stocks from last year’s droughts – that prices can be expected to increase later this year as well. Another factor driving up the costs of food is the price of oil. Because the entire industrial agriculture process requires the use of fossil fuels, the high price of oil results in a corresponding rise in the price of food. The future of oil production and whether we have reached “peak oil” may still be a matter of contention for some, but the increasing reliance on extreme energy processes (tar sands, hydraulic fracturing, mountaintop removal, etc.) is a blatant indication that the days of cheap petroleum are over. This implies that costs for energy extraction, and therefore the price of oil and food, will only continue to rise dramatically in the foreseeable future. As the struggle for resources and security escalates, governments around the world will rely more heavily upon totalitarian forms of control and reinforcement of order, especially as civil unrest becomes more common and outside threats with other countries intensify. However, this is also likely to be matched by an increase in resistance to the demands of the socio-political-economic hierarchies. Emerging Alternatives As system disruptions continue to occur and food and other essential resources become scarcer, remaining populations will have to become locally self-sufficient to a degree not seen for several generations. The need for restructuring the way in which our communities have access to food and water is greater now than perhaps ever before – and there are more than a few examples being built around the world right now. A few weeks ago, I had the privilege of hearing a presentation at the Ecosocialist Conference in NYC on precisely these alternatives. Speaking on a panel entitled “Agriculture and Food: Sustainable or Profitable?” was David Barkin, a Distinguished Professor at the Universidad Autonoma Metropolitana in Mexico City, who has been collaborating with thousands of communities in Mexico and Latin America involved in constructing post-capitalist societies. [8] In his presentation he spoke greatly about local groups – comprising of 30,000-50,000 people each, together being more than 130 million people – throughout Mexico and Latin America that are rebuilding their societies based on five principles that were written by the communities themselves and then systematized. Self-management; through a process of participatory democracy Solidarity; through rejecting the notion of wage-labor and re-organizing the entire work process Self-sufficiency; which includes contacts and exchanges between many organizations so that you are not limited to the resource or climate-base of a single community but a development of trade networks Diversification Sustainable regional resource management; most communities in Mexico and Latin American define a region based on the natural definition of watersheds, although that may not be the most applicable natural definition in other parts of the world He also spoke of groups such as the EZLN as examples of groups building alternative models – not models that are working at a super-structural level to change government policy, but models that give power and control directly to the community for the purposes of self-sufficiency and sustainability. In Peru, Bolivia, and Ecuador there is a phrase “El Buen Vivir” or “Sumak Kawsay,” – a cosmology that is said to come from indigenous cultures – that is actually informing how communities are rebuilding. It is proposed to promote sustainable relationships with nature and for communities to be less consumerist. In addition to radically rebuilding our communities so that they exist not only wholly independent from industrial agriculture but also in harmony with the natural world, we need to build a greater resistance movement against industrial infrastructure that continues to threaten the very possibility of people all over the world from taking these steps. Mining and its infrastructure, which is required for the development of solar panels and wind turbines, uses gigantic volumes of water for it to work.

#### B) Extend Barker – oil is limited and runs out within decades due to increasing demand – causes a collapse of industrial agriculture since it relies on food for export which requires oil-intensive transportation – this makes collapse inevitable

#### *Peak oil is coming now which guarantees the catastrophic collapse of industrial agriculture*

*Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT*

*Recently, there has been much speculation about the causes of higher oil prices, and continuing dis- cussion about the likelihood of whether or not prices will continue to rise. Commentary has focused on the war in Iraq and accompanying geopolitical instability in the Middle East; increasing dependence on Russia; governments in Latin American nationalizing their oil industries; and supply chain bottle necks such as refining capacity. However, the geological constraints on future energy supply, known as peak oil—the point at which oil production stops rising and begins an inevitable long-term decline—have received much less atten- tion. As noted in Fuelling A Food Crisis: The Impact of Peak Oil on Food Security: While the majority of constraints on access to oil could potentially be overcome through political or economic means, the geological reality of ever dwindling fossil-fuel supplies is non-negotiable. While it has taken 145 years to consume half of the 2-2.5 trillion barrels of conventional oil sup- plies generally regarded as the total available, it is likely that, given the huge increases of demand from China and India in particular, the other half will be largely consumed within the next 40 years. Some 98 percent of global crude oil comes from 45 nations, over half of which may already have peaked in oil production, including seven of the 11 OPEC nations. Major oil field discoveries fell to zero for the first time in 2003, while the excess capacity held by OPEC nations has dwindled, from an average of 30 percent to about 1 percent of global demand today. World oil and gas production is declining at an average of 4-6 percent a year, while demand is growing at 2-3 percent a year.2 Ironically, the present system of industrial agriculture is a major contributor to these problems. Agriculture is responsible for an estimated one-third of emissions that contribute to global warming and climate change. It is generally agreed that about 25 percent of the main greenhouse gas—carbon dioxide—is produced by agricultural pesticides and chemicals, and via deforestation and the burning of bio- mass. Most of the methane in the atmosphere comes from domestic ruminants, forest fires, wetland rice cultivation and waste products, while conventional tillage and fertilizer use account for 70 percent of the nitrous oxides.3 This set of conditions is rapidly destroying our shared heritage called the “commons”—that is, the planet’s natural resources necessary to grow food. And, although the revenge of nature itself may eventually force the end of the current global industrial agriculture model, the cost will most certainly be the destruction of millions of livelihoods and lives, scarce food supplies, and devastation to the planet’s natural systems. Given the potential for such catastrophe, it is critical to quickly restore and enhance food and fiber systems that are more regionally based, and that respect societies, cultures, and nature. GROWING FOOD ONCE EXPRESSED a “personal” relationship between human beings, wildlife and the earth. Successful farming was based on generations of accumulated knowledge about place: climate, land, water, soil and the organisms within it; mixing and rotating crops, seed saving, breeding, and recy- cling organic matter. Growing food was an intimate process; it involved farmer, land, and community, with the goal of sustaining that life-giving exchange in perpetuity. At the heart of the matter: a deep love of the land. Over the past several centuries, most food has primarily been grown locally for local community and family consumption. Until very recently, developing countries grew 90 percent of the food they con- sumed domestically and for small local markets.1 Over the centuries, local farmers developed seeds and used them collectively as a community to re-plant for the next harvest. They invented a variety of cultiva- tion methods, crops, and pest management systems that were unique to local ecosystems and cultures. Communities freely shared all local “commons”—water, labor, seeds, traditional knowledge and innova- tion—that were vital to food cultivation and the survival of stable communities. Natural resources were carefully nurtured to maintain an important balance between regional fish, fowl, and other wild creatures, and the needs of the community. As one United Nations Environment Program (UNEP) report observed: “In India, peasants grow over forty different crops on localities that have been cultivated for more than two thousand years without a drop in yields, yet have remained free of pests.”2 The report also attested to the benefits of agro-ecologi- cal approaches over millennia, citing practices of indigenous populations that are “based on ecological knowledge and understanding” and are “highly efficient and productive and inherently sustainable.” Cultures have successfully adapted to difficult environments with innovative techniques for irrigation, drainage, soil fertility, frost control, and disease management. In Central America, for example, ingenious raised-bed systems known variously as chiampas, waru waru, or tablones have withstood truly terrible geo- logical conditions and have successfully fed populations without ecological damage. Similarly, highly evolved, locally appropriate systems are found in Africa, the Andes region, South Asia, and many other places. All of these successful adaptations resulted from farmers’ intimate relations with the land, weather conditions, and unique local conditions. In this way, people fed themselves for millennia. Local, decentralized food production still provides millions of livelihoods around the world and pro- vides fresh, nutritious food direct from the land to the table without the stresses and expenses of long distance shipping. India’s wheat economy is a good example of this. Millions of Indian farmers grow over 6 billion tons of wheat per year. Leading food rights advocate Dr. Vandana Shiva explains the process in the IFG book Views From the South: A chain of traders (artis), bring wheat directly from the farm to the local shops. Most people buy fresh wheat from the local corner store (kirana) and then take it to the local mill operators (chakki wallas). It is estimated that over 2 million small neighborhood mills produce fresh flour. Additionally, flour is produced by women working in households. Shiva observes: “Less than 1 percent of flour carries a brand name because Indian consumers trust their own supervision of quality at the local mill better than a brand name attached to stale, packaged flour.” Small-scale, local food economies have successfully sustained millions of people for many centuries with little capital investment and infrastructure. Rather than technology and investment capital, people and natural resources (“natural capital”) are at the center of this system. Additionally, these centuries-old knowledge systems begat amazing food diversity. Traditional cultures enjoyed beautiful varieties of rice, potatoes, beans, corn, and other foods. Indeed, cultures were created and defined by the diversity of their foods. Annual festivals and seasonal celebrations of planting and harvesting helped ensure that the culture was imbued with nature-based practices over the centuries. radical shift to corporate control During the last century, a radical new approach to agriculture emerged. Instead of local farmers growing food locally for their own communities, a new highly centralized, global system of industrialized agricul- ture rapidly began replacing the local, decentralized small-scale food systems connected to traditional cul- tures, climates, geography, ecosystems, and other endemic factors. This model now represents the dominant paradigm for industrial, northern countries. Beginning with the Green Revolution, many developing countries began to adopt industrial agriculture practices as well. This industrial regime of the last few decades is characterized by excessive focus on the import and export of food, and is promoted and enforced by international institutions and agreements such as the World Bank, the International Monetary Fund (IMF), the World Trade Organization (WTO) and other regional and bilateral trade and investment agreements. Unlike the agreements of other international bureaucracies, such as those of the United Nations, the WTO’s agreements are legally binding and have strong enforcement capability. Thus, they have become the most important vehicles for implementing economic and also social policies across the world. Though the rules and policies of recent global agreements and institutions are negotiated between governments, they are largely crafted by large agribusiness corporations—the primary beneficiaries. A salient feature of these agreements is that food is treated as a commodity rather than as crucial for the survival of all humans. Given that food is a basic necessity of life, unlike other commodities such as tires or computers, many governments and civil society movements believe that such policies are griev- ously misguided. As Lori Wallach of Public Citizen puts it, “Food—like water—is not an optional prod- uct that consumers may choose to purchase: food is the basis of life. People without food die, while people without cars or tires walk and people without tin ore use local materials.”3 As such, many believe that governments have an obligation to ensure food as a basic human right. The result of this shift has been a loss of livelihoods for millions of farmers, and the depression of rural communities; an increase in hunger in many parts of the globe; compromised nutrition and safety of food; increased environmental destruction; and the control of food production and distribution by an ever-smaller number of giant global agribusinesses. (See Box 1.) These are some of the outcomes of this shift: ❖ Local self-reliant food systems that had provided food and livelihoods for millions, and a secure food supply, are rapidly being replaced by corporate control—often foreign corporations—over farm inputs, energy, crop commodity prices, food production, and marketing. These corporations value profits and export trade over the needs of local communities for food and sustainable products. ❖ Industrial agriculture eliminates diverse food production for local needs, replacing it with large scale monocultural production of one or two crops appropriate for export markets; thus, diminishing natural biodiversity—of micro organisms, plants, insects, and animals, and diminishing local food supply as well. ❖ Heavy use of industrial agricultural processes, including pesticides, chemical fertilizers and fossil fuel-based machinery are rapidly destroying the vitality of the soil, polluting and over-using scarce fresh water, polluting the air, and harming wildlife and humans. ❖ The corporate introduction of genetically modified organisms (GMOs) and plants further destroys biodiversity and brings unknown, potentially catastrophic dangers via new forms of biopollution. ❖ The export driven model of globalized agriculture requires a huge increase in transport infrastruc- tures —roads, ports, airports, energy grids—often constructed at the expense of nature and in defiance of global energy shortages. ❖ Massive shipments of agricultural commodities across great distances requires additional fossil fuel usage, refrigeration, packaging, etc. and fosters mobility of exotic plant and animal species, and the spread of pests, viruses, bacteria, and disease. ❖ Control over and accesstothe mostessential elements of life—thecommons—arebeingstrippedaway from local communities and given over to corporations (often via World Bank privatization schemes). ❖ Traditional knowledge of seeds, plants, and cultivation are being expropriated for profit, and patented by large corporations—a process known as “biopiracy.” ❖ Agriculture accounts for approximately 25 percent of carbon dioxide emissions; and 70 percent of nitrous oxide emissions.4 global macro effects The expansion of the industrial agriculture model affects everyone, whether they live in cities, suburban America, or the countryside in the global South or North. To illustrate, we offer examples below on how globalized industrial agriculture relates to two of the most pressing issues of our time: immigration and global warming. –9– part one The Roots of Migration The issue of immigration has dozens of countries in serious turmoil. The U.S. is no exception. Here, the raging debate about immigration is largely the result of globalized industrial agriculture, and trade agree- ments that embrace this model. Between 1990 and 2005, the number of migrants from Mexico and Central America living in the U.S. without authorization spiked from 2 million to an estimated 6.2 million. Many of these migrants could be called “NAFTA refugees.” The North American Free Trade Agreement (NAFTA), which went into effect in 1994, lifted barriers to “free” agricultural trade between North and South, with dire consequences. As part of the condition for joining NAFTA, Mexico was required to drastically change its Constitution and abandon the traditional ejido system of communal land and resource ownership. This is the system created after the Mexican Revolution of the early 20th century that made traditional farming in Mexico productive and viable. Mexico was also forced to dismantle a system that had provided a guaranteed floor price for corn for Mexican farmers, which had sustained over 3 million corn producers. As a result of NAFTA, Mexican farmers suddenly found themselves competing with an influx of cheap agricultural commodities produced by large-scale, heavily subsidized U.S. producers. Corn imports from the North grew 17-fold between 1993 and 2001 and accounted for 25 percent of Mexican corn consumption. This compared to a pre-NAFTA figure of 2 percent.5 Within a year of NAFTA’s passage, Mexican production of corn and other basic grains fell by 50 percent, and millions of peasant farmers lost a significant source of their incomes.6 Facing dire poverty in the Mexican countryside, millions of farmers migrated off their lands and made the wrenching decision to leave behind families and communities and head northward. Once in the United States, these migrants often found jobs in the fields, performing backbreaking work for poor pay and with- out basic rights. Thousands of others toil in industrial food processing plants, where conditions today resemble those depicted in The Jungle by Upton Sinclair at the end of the 19th century. Despite NAFTA’s record, the U.S. Congress approved a similar agreement with Central America in 2005 that is expected to have similar devastating effects on small farmers in those countries. Many of them will also likely attempt to seek economic opportunities in the United States. Similar stories could be told throughout the developing world; farmers everywhere are vulnerable to import competition, not only because of free trade agreements but also due to World Bank- and IMF-promoted cuts to all types of supports for small-scale agriculture, as this report will discuss. Climate Change/Peak Oil—Fatal Threats to Globalized Agriculture Another threat from globalized industrial agriculture is the role it plays in the rapid advancement of cli- mate change on the earth. In dozens of ways, from destruction of carbon-absorbing forests, to the massive over-use of fossil fuels for production and for transportation (upon which the entire model depends), climate change is directly furthered. One-eighth of the world oil supply is now used for transportation with a very high percentage of that being used for long distance shipment of food across oceans or continents. It has been widely quoted that the average plate of food on an American dinner table today has traveled more than 1,500 miles from source to plate. According to Edward Goldsmith, Europe’s leading ecological thinker, and publisher of The Ecologist, industrial agriculture bears overall responsibility for about 25 percent of the world’s carbon dioxide emissions, 60 percent of methane gas emissions, and 70-80 percent of nitrous oxide—all of them major greenhouse gasses contributing to climate change.7 Many climate scien- tists already predict hundreds more storms on the scale of Katrina or worse, and a rise in sea levels that could inundate thousands of miles of coastal farmlands in both North and South. Ironically, there is also a reverse kind of threat to the food supply within a global industrial agricul- ture system, in that we are now approaching an unprecedented shortage of oil and natural gas on the Earth, called “peak oil” by many scientists and even corporations and governments. When that shortage fully kicks-in—and some say it is doing so now—the entire global industrial agriculture system could be threatened with collapse, as it will not be able to maintain long distance shipping in the face of increasingly high energy costs. This could play havoc with food delivery globally and itself bring on a reversal of current trends.*

#### 2. Yields are irrelevant – the more important question is one of food access and security, which industrial agriculture undermines

Gonzalez 7 [(Carmen, Fulbright Scholar in Argentina, a Visiting Fellow at Cambridge University in the United Kingdom, a Visiting Professor at the Hopkins-Nanjing Center in Nanjing, China, Chair of the Environmental Law Section of the Association of American Law Schools) “Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens” A Center for Progressive ReformWhite Paper April 2007] AT

Hunger in the developing world is often exacerbated by unsustainable farming practices that degrade the natural resources necessary for food production.43 Chemical-intensive, monocultural farming practices have triggered a wide range of environmental problems in both developed and developing countries, including diminution of agricultural productivity, soil degradation, contamination and depletion of freshwater reserves, and loss of biodiversity.44 Environmental degradation in developing countries has also increased poverty, provoked mass migrations, intensified racial and ethnic tensions, and incited violent conflict over dwindling access to vital natural resources.45 In order to understand the underlying causes of undernourishment and environmental degradation in the developing world, it is necessary to begin with four key propositions. First, contrary to popular misconception, hunger is not a function of food scarcity. Based upon economist Amartya Sen’s pioneering study of famine46 and on the World Bank’s influential 1986 report on world hunger,47 it is now widely accepted that lack of access to food rather than inadequate supply is the primary cause of hunger.48 Indeed, food production world-wide has kept far ahead of population growth for the last several decades,49 and many of the developing countries experiencing chronic undernourishment are net food exporters.50 People go hungry because they are poor – because they lack the resources with which to grow or purchase food.51 Consequently, efforts to solve the problem of hunger in the developing world must target poverty and inequality. Second, poverty and undernourishment in developing countries are concentrated in rural areas.52 Approximately 75 percent of the poor in the developing world are rural dwellers.53 Most are small farmers whose livelihoods depend on selling their agriculture output.54 Thus, policies and programs that provide food to developing countries free of charge or at subsidized prices may exacerbate hunger by depressing agricultural commodity prices and depriving poor farmers of the income needed to pay taxes and to buy vital consumer goods not produced on the farm.55 Third, economic diversification and industrialization are essential to poverty alleviation and to the promotion of food security.56 A food-secure country is one that can grow, import, or obtain as aid the food necessary to meet the needs of its population.57 The most food-insecure developing countries are those that rely on a small number of primary agricultural commodities to finance the importation of food products and manufactured goods.58 Poor harvests, fluctuations in world market prices for agricultural products, and the declining terms of trade for agricultural commodities vis-à-vis manufactured goods can interfere with the ability of these countries to purchase food and other essential items in international markets and can deprive these countries of export earnings needed for productive investment.59 According to the U.N. Food and Agriculture Organization, as many as 43 developing countries in sub-Saharan Africa, Latin America and the Caribbean depend on agricultural exports for over half of export revenues and depend on a single agricultural commodity to generate over 20 percent of total foreign exchange earnings.60

#### 3. Organic ag doesn’t kill yields

#### A) Extend Ho – a series of studies prove organic agriculture increases yields on net – prefer this evidence since

#### 1. It uses studies from many global sources which includes a wide variety of research techniques and sources – prevents biases and increases accuracy

#### 2. It’s a summary of a United Nations report which requires rigorous review by international researchers – that means any objections or flaws were corrected

#### 3. It also measures resilience to disease, pests, and weather – just improving output isn’t relevant since these factors reduce the amount of food produced. This outweighs all other evidence indicts since it means their evidence literally ignores relevant concerns that have a stronger influence on results than methodology.

#### B) The plan makes organic ag more productive – their studies don’t apply

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

Our results suggest that organic methods of food production can contribute substantially to feeding the current and future human population on the current agricultural land base, while maintaining soil fertility. In fact, the models suggest the possibility that the agricultural land base could eventually be reduced if organic production methods were employed, although additional intensification via conventional methods in the tropics would have the same effect. Our calculations probably underestimate actual output on many organic farms. Yield ratios were reported for individual crops, but many organic farmers use polycultures and multiple cropping systems, from which the total production per unit area is often substantially higher than for single crops 48,58. Also, there is scope for increased production on organic farms, since most agricultural research of the past 50 years has focused on conventional methods. Arguably, comparable efforts focused on organic practices would lead to further improvements in yields as well as in soil fertility and pest management. Production per unit area is greater on small farms than on large farms in both developed and developing countries59; thus, an increase in the number of small farms would also enhance food production. Finally, organic production on average requires more hand labor than does conventional production, but the labor is often spread out more evenly over the growing season25,60–62. This requirement has the potential to alleviate rural unemployment in many areas and to reduce the trend of shantytown construction surrounding many large cities of the developing world. Pg. 94

#### C) A study based on a massive dataset confirm organics can profitably feed the world.

Horlings & Marsden 11—Lecturer in Rural Sociology Group, Wageningen University & Director of Sustainable Places Research Institute, Cardiff University [Dr. L.G. Horlings & T.K. Marsden, “Towards the real green revolution? Exploring the conceptual dimensions of a new ecological modernisation of agriculture that could ‘feed the world’” Global Environmental Change, Volume 21, Issue 2, May 2011, Pages 441–452]

During an international conference on organic agriculture and food security in 2007 in Italy it was stated that organic agriculture could produce enough food on a global per capita basis (Halberg et al., 2007; Scialabba, 2007), based on models of Badgley et al. (2007) and Halberg et al. (2007). Badgley et al. compared yields of organic versus conventional or low-intensive food production for a global dataset of 293 examples and estimated the average yield ratio organic: non-organic of different food categories for the developed and the developing world. For most food categories, the average yield ratio was slightly <1.0 for studies in the developed world and >1.0 for studies in the developing world. High yield ratios in the developing world are obtained when farmers incorporate intensive agro-ecological techniques such as crop rotation, cover cropping, agro-forestry, addition of organic fertilizers or more efficient water management (Badgley et al., 2007, p. 92). An FAO analysis based on more than 50 cases in the USA and Europe, and just over a dozen studies in developing countries, showed that organic farms are more economically profitable, despite frequent yield decrease (Nemes, 2009). Higher outcomes are due to premium prices and predominantly lower production costs. These conclusions can also be drawn from studies in developing countries, but there, higher yields combined with high premiums are the underlying cause for higher relative profitability. Pg.446-447

### Their Studies Inaccurate

#### 1. Industrial methods are used for exports, primarily of cash crops that are non-essential and don’t trigger their impact such as coffee or tea – empirically proven

Find card that says it only counts ONE type of crop

### UQ + Soil and Land Turn

#### We control uniqueness – industrial agriculture is causing starvation and food wars now and it’s getting worse due to soil depletion and land depletion – regardless of yields, only local agriculture can solve

Headley 5/12 [(Joshua, founder of Deep Green Resistance environmental movement) “BREAKDOWN: Industrial Agriculture” Deep Green Resistance May 12 2013] AT

In no other industry today is it more obvious to see the culmination of affects of social, political, economic, and ecological instability than in the global production of food. As a defining characteristic of civilization itself, it is no wonder why scientists today are closely monitoring the industrial agricultural system and its ability (or lack thereof) to meet the demands of an expanding global population. Amidst soil degradation, resource depletion, rising global temperatures, severe climate disruptions such as floods and droughts, ocean acidification, rapidly decreasing biodiversity, and the threat of irreversible climatic change, food production is perhaps more vulnerable today than ever in our history. Currently, as many as 2 billion people are estimated to be living in hunger – but that number is set to dramatically escalate, creating a reality in which massive starvation, on an inconceivable scale, is inevitable. With these converging crises, we can readily see within agriculture and food production that our global industrial civilization is experiencing a decline in complexity that it cannot adequately remediate, thus increasing our vulnerability to collapse. Industrial agriculture has reached the point of declining marginal returns – there may be years of fluctuation in global food production but we are unlikely to ever reach peak levels again in the foreseeable future. While often articulated that technological innovation could present near-term solutions, advocates of this thought tend to forget almost completely the various contributing factors to declining returns that cannot be resolved in such a manner. There is also much evidence, within agriculture’s own history, that a given technology that has the potential to increase yields and production (such as the advent of the plow or discovery of oil) tends to, over time, actually reduce that potential and significantly escalate the problem. Peak Soil A largely overlooked problem is soil fertility. [1] A civilization dependent on agriculture can only “sustain” itself and “progress,” for as long as the landbase and soil on which it depends can continue to thrive. The landscape of the world today should act as a blatant reminder of this fact. What comes to mind when you think of Iraq? Cedar forests so thick that sunlight never touches the ground? “The Fertile Crescent,” as this region is also known, is the cradle of civilization and if we take a look at it today we can quickly deduce that overexploitation of the land and soil is inherent to this way of life. The Sahara Desert also serves as a pressing example – a region once used by the Roman Empire for food cultivation and production. But this problem has not escaped our modern industrial civilization either, even despite some technological advances that have been successful at concealing it. The only thing we have genuinely been “successful” at is postponing the inevitable. Currently, industrial agriculture depletes the soil about a millimeter per year, which is ten times greater than the rate of soil formation. Over the last century, we have solved this problem by increasing the amount of land under cultivation and by the use of fertilizers, pesticides, and crop varieties. Industrial civilization has expanded so greatly, however, that we currently already use most of the world’s arable land for agriculture. To solve the problems of peak soil today, as we have previously, would require doubling the land currently used for cultivation at the cost of some of the worlds last remaining forests and grasslands – most notably the Amazon and the Sahel. Not only is this option impractical, given the current state of the climate, it is wholly insane. Another problem we face today is that more than a half-century of reliance on fertilizers and pesticides has severely reduced the level of organic matter in the soil. An advance in chemical fertilizers and/or genetic engineering of crops, while promising boosted yields in the near-term, will only further delay the problem while at the same time possibly introducing even greater health risks and other unforeseen consequences. Decreasing Yields & Reserve Stocks According to an Earth Policy Institute report in January, global grain harvests and stocks fell dangerously low in 2012 with total grain production down 75 million tons from the record year before. [2] Most of this decrease in production occurred as a result of the devastating drought that affected nearly every major agricultural region in the world. The United States – the largest producer of corn (the world’s largest crop) – has yet to fully recover from the drought last year and this is a cause for major concern. Overall, global grain consumption last year exceeded global production requiring a large dependence on the world’s diminishing reserve stocks. And this isn’t the first time it has happened – 8 out of the last 13 years have seen consumption exceed production. In an escalating ecological crisis this is likely to be the new “normal.” This fact, in itself, is a strong indication that industrial civilization is dangerously vulnerable to collapse. The issue here is two-fold: resource scarcity (industrial agriculture requires fossil fuels in every step of the process), soil degradation, and climate disruptions (droughts, floods, etc.) are severely reducing the yields of industrial agriculture; at the same time (and precisely because of those facts), we are becoming increasingly reliant on carryover reserve stocks of grains to meet current demands thus creating a situation in which we have little to no capacity to rebuild those stocks. As Joseph Tainter describes in The Collapse of Complex Societies, a society becomes vulnerable to collapse when investment in complexity begins to yield a declining marginal return. Stress and perturbation are common (and constant) features of all complex societies and they are precisely organized at high levels of complexity in order to deal with those problems. However, major, unexpected stress surges (which do occur given enough time) require the society to have some kind of net reserve, such as excess productive capacities or hoarded surpluses – without such a reserve, massive perturbations cannot be accommodated. He continues: “Excess productive capacity will at some point be used up, and accumulated surpluses allocated to current operating needs. There is, then, little or no surplus with which to counter major adversities. Unexpected stress surges must be dealt with out of the current operating budget, often ineffectually, and always to the detriment of the system as a whole. Even if the stress is successfully met, the society is weakened in the process, and made even more vulnerable to the next crisis. Once a complex society develops the vulnerabilities of declining marginal returns, collapse may merely require sufficient passage of time to render probable the occurrence of an insurmountable calamity.” [3] Current global reserve stocks of grains stand at approximately 423 million tons, enough to cover 68 days of consumption. As population and consumption levels continue to rise while productive capacities fall, we will be more and more dependent on these shrinking reserves making our ability to address future stresses to the system significantly low. Disappearance of the Arctic Sea Ice One such “insurmountable calamity,” may be quickly on the horizon. This week, senior US government officials were briefed at the White House on the danger of an ice-free Arctic in the summer within two years. One of the leading scientists advising the officials is marine scientist Professor Carlos Duante, who warned in early April: “The Arctic situation is snowballing: dangerous changes in the Arctic derived from accumulated anthropogenic green house gases lead to more activities conducive to further greenhouse gas emissions. This situation has the momentum of a runaway train.” [4] Over the last few years, the excessive melting occurring in the Arctic region due to rising global temperatures has altered the jet stream over North America, Europe, and Russia leading to the very unprecedented heat waves and droughts responsible for most of the declining returns in agricultural production in recent years. As the warming and melting continue, these extreme weather events will exponentially get worse. In addition, the melting of the sea ice will significantly raise sea level with the potential to displace more than 400 million people. The UK-based Arctic Methane Emergency Group recently released a public statement also indicating: “The weather extremes from last year are causing real problems for farmers, not only in the UK, but in the US and many grain-producing countries. World food production can be expected to decline, with mass starvation inevitable. The price of food will rise inexorably, producing global unrest and making food security even more of an issue.” [5] Social, Political, and Economic Instability No civilization can avoid collapse if it fails to feed its population, largely because continued pressures on the system will result in the disintegration of central control as global conflicts arise over scarce necessities. [6] This process can occur rapidly and/or through a gradual breakdown. A likely scenario of rapid collapse would be the breakout of a small regional nuclear war – such as between Pakistan and India – which would create a “nuclear winter” with massive global consequences. If that could be avoided, then the threat of collapse will likely be more gradual through the continued decrease of marginal returns on food and essential services. As these crises continue to increase in frequency and severity, their convergences will usher in a period of prolonged global unrest. [7] This was directly seen as a result of the 2007-08 grain crisis in which many countries restricted exports, prices skyrocketed, and food riots broke out in dozens of countries. Many of those countries were located within the Middle East and are credited as the fundamental circumstances that gave way to the Arab Spring in 2011. This year the food price index is currently at 210 – a level believed to be the threshold beyond which civil unrest is probable. Further, the UN’s Food and Agriculture Organization is already reporting record high prices for dairy, meat, sugar and cereals and also warns – due to the reduced grain stocks from last year’s droughts – that prices can be expected to increase later this year as well. Another factor driving up the costs of food is the price of oil. Because the entire industrial agriculture process requires the use of fossil fuels, the high price of oil results in a corresponding rise in the price of food. The future of oil production and whether we have reached “peak oil” may still be a matter of contention for some, but the increasing reliance on extreme energy processes (tar sands, hydraulic fracturing, mountaintop removal, etc.) is a blatant indication that the days of cheap petroleum are over. This implies that costs for energy extraction, and therefore the price of oil and food, will only continue to rise dramatically in the foreseeable future. As the struggle for resources and security escalates, governments around the world will rely more heavily upon totalitarian forms of control and reinforcement of order, especially as civil unrest becomes more common and outside threats with other countries intensify. However, this is also likely to be matched by an increase in resistance to the demands of the socio-political-economic hierarchies. Emerging Alternatives As system disruptions continue to occur and food and other essential resources become scarcer, remaining populations will have to become locally self-sufficient to a degree not seen for several generations. The need for restructuring the way in which our communities have access to food and water is greater now than perhaps ever before – and there are more than a few examples being built around the world right now. A few weeks ago, I had the privilege of hearing a presentation at the Ecosocialist Conference in NYC on precisely these alternatives. Speaking on a panel entitled “Agriculture and Food: Sustainable or Profitable?” was David Barkin, a Distinguished Professor at the Universidad Autonoma Metropolitana in Mexico City, who has been collaborating with thousands of communities in Mexico and Latin America involved in constructing post-capitalist societies. [8] In his presentation he spoke greatly about local groups – comprising of 30,000-50,000 people each, together being more than 130 million people – throughout Mexico and Latin America that are rebuilding their societies based on five principles that were written by the communities themselves and then systematized. Self-management; through a process of participatory democracy Solidarity; through rejecting the notion of wage-labor and re-organizing the entire work process Self-sufficiency; which includes contacts and exchanges between many organizations so that you are not limited to the resource or climate-base of a single community but a development of trade networks Diversification Sustainable regional resource management; most communities in Mexico and Latin American define a region based on the natural definition of watersheds, although that may not be the most applicable natural definition in other parts of the world He also spoke of groups such as the EZLN as examples of groups building alternative models – not models that are working at a super-structural level to change government policy, but models that give power and control directly to the community for the purposes of self-sufficiency and sustainability. In Peru, Bolivia, and Ecuador there is a phrase “El Buen Vivir” or “Sumak Kawsay,” – a cosmology that is said to come from indigenous cultures – that is actually informing how communities are rebuilding. It is proposed to promote sustainable relationships with nature and for communities to be less consumerist. In addition to radically rebuilding our communities so that they exist not only wholly independent from industrial agriculture but also in harmony with the natural world, we need to build a greater resistance movement against industrial infrastructure that continues to threaten the very possibility of people all over the world from taking these steps. Mining and its infrastructure, which is required for the development of solar panels and wind turbines, uses gigantic volumes of water for it to work. Because of this, in many parts of Mexico (where North American mining companies currently have concessions on 40% of the country’s land area) and Latin America, mining is a question of taking water away from agriculture. The struggle against mining is not just a struggle against environmental destruction, but it is a struggle for food. The same can be said of foreign investments in wind turbine farms in Mexico and Puerto Rico, where local communities actually oppose these “renewable energy” infrastructures because they not only degrade the environment but also because it steals land that might otherwise be used for the direct needs of the locality. Those of us in the most developed and industrialized nations need to radically alter our conceptions of sustainability and what is possible – a process that should be guided and influenced by those currently most vulnerable. Many well-meaning activists in the West tend to take perspectives that never really question our own standard of living – a standard of living David Barkin so rightfully articulated as an abomination. We tend to favor “green energy” projects and the further development and industrialization of the “Global South” so that we don’t fundamentally have to make any sacrifices ourselves. Embedded in these perspectives are the racist and colonialist ideas that less developed countries in the world either don’t know what they want or don’t have the ability to create what they want themselves and thus need the technology and advances of the West to save them. David Barkin’s presentation was a blatant reminder that this is far from the truth. Right now, in Mexico and Latin America, there are communities directly involved in building their own alternatives. And these aren’t communities of just a few hundred people; these aren’t small, insignificant projects. These are communities as large as 50,000 people each – an entire network of more than 130 million people – directly struggling and fighting for a radically different future. We have much to learn and our time is running out. As industrial agriculture’s ability to produce food for the global population continues to decline, our resistance and our alternatives must escalate in lockstep – and there’s no reason for us to continue to ignore the alternative models and successes of our brothers and sisters in the rest of the world

### Hunger + Allocation---Short

#### Yields are irrelevant – the more important question is one of food access and security, which industrial agriculture undermines

Gonzalez 7 [(Carmen, Fulbright Scholar in Argentina, a Visiting Fellow at Cambridge University in the United Kingdom, a Visiting Professor at the Hopkins-Nanjing Center in Nanjing, China, Chair of the Environmental Law Section of the Association of American Law Schools) “Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens” A Center for Progressive ReformWhite Paper April 2007] AT

Hunger in the developing world is often exacerbated by unsustainable farming practices that degrade the natural resources necessary for food production.43 Chemical-intensive, monocultural farming practices have triggered a wide range of environmental problems in both developed and developing countries, including diminution of agricultural productivity, soil degradation, contamination and depletion of freshwater reserves, and loss of biodiversity.44 Environmental degradation in developing countries has also increased poverty, provoked mass migrations, intensified racial and ethnic tensions, and incited violent conflict over dwindling access to vital natural resources.45 In order to understand the underlying causes of undernourishment and environmental degradation in the developing world, it is necessary to begin with four key propositions. First, contrary to popular misconception, hunger is not a function of food scarcity. Based upon economist Amartya Sen’s pioneering study of famine46 and on the World Bank’s influential 1986 report on world hunger,47 it is now widely accepted that lack of access to food rather than inadequate supply is the primary cause of hunger.48 Indeed, food production world-wide has kept far ahead of population growth for the last several decades,49 and many of the developing countries experiencing chronic undernourishment are net food exporters.50 People go hungry because they are poor – because they lack the resources with which to grow or purchase food.51 Consequently, efforts to solve the problem of hunger in the developing world must target poverty and inequality. Second, poverty and undernourishment in developing countries are concentrated in rural areas.52 Approximately 75 percent of the poor in the developing world are rural dwellers.53 Most are small farmers whose livelihoods depend on selling their agriculture output.54 Thus, policies and programs that provide food to developing countries free of charge or at subsidized prices may exacerbate hunger by depressing agricultural commodity prices and depriving poor farmers of the income needed to pay taxes and to buy vital consumer goods not produced on the farm.55 Third, economic diversification and industrialization are essential to poverty alleviation and to the promotion of food security.56 A food-secure country is one that can grow, import, or obtain as aid the food necessary to meet the needs of its population.57 The most food-insecure developing countries are those that rely on a small number of primary agricultural commodities to finance the importation of food products and manufactured goods.58 Poor harvests, fluctuations in world market prices for agricultural products, and the declining terms of trade for agricultural commodities vis-à-vis manufactured goods can interfere with the ability of these countries to purchase food and other essential items in international markets and can deprive these countries of export earnings needed for productive investment.59 According to the U.N. Food and Agriculture Organization, as many as 43 developing countries in sub-Saharan Africa, Latin America and the Caribbean depend on agricultural exports for over half of export revenues and depend on a single agricultural commodity to generate over 20 percent of total foreign exchange earnings.60

### Hunger + Allocation---Longer

#### Best empirics go aff

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

5. Globalisation and the creation of hunger Agribusiness is harvesting both the stocks and agricultural subsidies to gain through agricultural exports. The same companies that gained through deregulated imports are now also gaining through deregulated exports. Millions of Indians go to bed hungry, as the government has dismantled the PDS system, and taken affordable food out of the reach of millions. Foodgrain export is liberalisation’s answer to the problem of ‘‘over-procurement’’ from farmers while it will bring in much needed foreign exchange. However, ever since Indian agriculture was subjected to liberalisation, both the share of agriculture exports in India’s total exports as well as their value in hard cash has actually declined. The share of agricultural exports in India’s total exports declined from 20.33% in 1996–1997 to 18.25% in 1998–1999 and further to 14.04% in 2001–2002 (Table 1). 5.1. Foodgrain exports did not benefit the national exchequer Each period of large exports has been followed by acute food shortage, and India has had to import the same grain again, often at higher prices. For instance, India exported 2.5 lakh tonnes of wheat during 1987–1988, followed by an import of 18 lakh tonnes in 1988–1989 [17]. 5.2. Foodgrain exports did not benefit the farmer Wheat exports had an inflationary impact on domestic prices, although this did not benefit the farmers, as during the harvesting period the prices are kept low, and even MSP rates are not enforced. 5.3. Foodgrain exports: Redirecting subsidies from farmers to traders The push towards exports is neither aimed at helping farmers or the nation’s finances; rather, in accordance with the impetus of WTO’s Agreement on Agri- culture, it is a way of diverting support away from farmers towards traders. While the government dismantles procurement and public food distribution because they are considered subsidies to the people of the country, and are supposed to distort trade, it allows traders to buy bulk grains from its go downs at prices even lower than those offered to the poorest of the poor. Moreover, the annual budgets since liberalization having been adding to the subsidies for the corporate sector–tax holi- days for building silos and cold storages, incentives for exporting, subsidized trans- portation to the ports of the traders’ choice. The experience of the 2001 wheat export, for instance, reveals this. As against an economic cost of Rs 8300 per tonne to the FCI and an open market price of Rs 7000 per tonne, India was offered a price of Rs 4300 per tonne in international market in May 2001. The government allowed FCI to charge any price for exports, as long as it is not below the below poverty line’ (BPL) rate. In this scenario, Cargill has emerged as the biggest buyer of subsidised wheat being pushed by India into world markets [17]. The offtake price of wheat for export has also been allowed to far below the BPL price of Rs. 4150 per tonne, to Rs. 3960 per tonne. At the same time, it has increased the above poverty line’ (APL) issue prices of wheat to Rs. 610 per quin- tal, and for rice to Rs. 830 per quintal. This price increase will only ensure that PDS offtake will be even lower, so that buffer stocks for exports will be maintained [17]. Globalisation, as directed by the World Bank/IMF structural adjustment programmes and the WTO has seen a return of famine. The intensification of hunger over the last five years, even while grains are overflowing from the godowns can thus not be attributed to drought and climatic conditions alone, but to the policies that govern people’s access to food. The policy changes have consistently attempted to decrease the government’s role in ensuring food security and livelihood security for farmers in particular by calling measures meant to aid people as ‘trade distorting’ and demanding that these be scrapped. The anomaly of the co-existence of burgeoning food stocks and mass starvation is today, as in the late 19th century, the direct consequence of trade-driven agricultural policies. The 1877 Deccan famine killed over a million people; the trade liberalisation of the last decade of the 1990s has seen India step into the new millennium with over 50 million starving people and millions more with drastically decreasing access to food.1 An obvious example of the policy shift from people centred concerns to trade- and corporation-centred concerns is the fact that while farmers are not allowed by law to take their produce beyond their state borders, traders can pick them up any- where and take them anywhere. In fact, the government is building super high- ways, after forcibly taking away land from farmers and communities to connect centres of agricultural production to airports and ports, so that corporations can quickly transport these commodities for export. The policy changes induced by trade liberalisation include: dismantling the Food Corporation of India (FCI) and reduce its role in procure- ment from farmers; . removal of QRs on imports of food and agricultural products; . the amendment of the Public Distribution System, to cater only to the BPL cate- gory of the population; . increase in the central issue price, from Rs. 450/quintal in April 1995, to Rs. 682 quintal in April 1999, and to Rs. 900/quintal in 2000; and . increased price of food available through the targeted PDS to the BPL as a result of transferring 50% of the procurement and distribution costs of the government to this category. These changed policies have had disastrous impacts for both farmers and con- sumers. 5.3.1. Farmers . Government procurement centres refusing to purchase foodgrains from farmers. . The refusal of the government to enforce MSP on private traders and corpora- tions, forcing farmers into distress sale of foodgrains at far below production costs. . Dumping of cheap, subsidised agricultural products by other countries in the Indian market [5]. . Increasing price of farm inputs, including seeds [14]. . Liberalising seed regulations to allow private seed companies sell uncertified seed [11]. . Deepening of farmers’ debt, increased mortgages and land alienation, increased destitution, suicides and sale of body parts among farmers. The prosperity that globalisation was suppose to spread is fast proving to be elusive. Trade liberalisation and globalisation has resulted in thousands of farmers sacrificing their lives and livelihoods. In fact, the most prosperous state, also called the breadbasket of India, Punjab, has left behind Andhra Pradesh in the notorious distinction of farmers’ suicides [14]. 5.3.2. Consumers . Massive reduction in the number of people accessing food from the targeted PDS due to the inability of the government to identify the BPL category of people. . Inability of the majority of even the few BPL identified to purchase food-grain from Fair Price Shops due to increased prices. . Drastic increase in food prices—by over 60% since the initiation of trade liberal- isation measures, and over 200% in commodities like pulses.2 Reduced PDS off- take by states due to increased issue prices. The shift from PDS for all to Targeted PDS was justified on grounds of reducing government expenditure. However, with trade liberalisation, the PDS costs to government have risen from Rs. 5,166 crores in the mid 1990s to Rs. 9300 in 1999– 2000.3 While the government blames farmers for this increased expenditure, the primary reason is the increased cost of food to consumers as a result of policy changes, resulting in a drastic decline in purchases from the Fair Price Shops. 5.4. Declining food production Export-oriented agricultural policies that push the small farmer to destitution on the one hand, and promote cash cropping on the other, have resulted in a steady decline in food production since the early 1990s. The collapse of domestic support for food production (through dismantling the MSP, rising costs of inputs, crop failure due to uncertified seeds) in the late 1990s has intensified this shift, as farm- ers are desperate to recover their losses. For instance, there has been a decline in food production to the order of 12.8% in just one year, 2000–2001 [7]. 5.5. Declining food consumption A major impact of trade liberalisation policies has been a general lowering of food consumption. The per capita cereal consumption has declined from 17 kg per capita per month in the 1950s to 13.5 kg per capita per month in the 1990s [5]. The National Nutrition Monitoring Bureau 1997 data shows a declining trend in consumption in rural India, particularly in cereal and millets, the main source of energy for the poor, from 1990–1995. The National Sample Survey (NSS) rounds starting from the 38th round have documented the decline in cereal consumption 1992, following the implementation of SAPs.4 The most important reasons for the decline are: rising food prices, destruction of livelihoods, destruction of the PDS system and shift to export oriented crops. The reduced consumption on the one hand, and decline in production and pro- curement on the other are directly linked though the food and agricultural policies of the government. Colonialism had destroyed the food sovereignty of the country, forcing changes in cropping from food for local and regional food security to commercial crops. Rice particularly had become a commercial crop even within the country. The emphasis on foreign trade had resulted in large scale famines in the country, forc- ing Cornelius Walford to comment in 1879 in The Famines of the World—‘‘it is an anomaly that, with her famines on hand, India is able to supply food for other parts of the world’’ [5]. Following independence, the Government’s priority was to ensure that farmers would produce food and thus government procurement (to ensure both that farm- ers produced food, and got just price for it) and the public distribution system (to ensure that consumers got adequate food at affordable prices) were designed. The need for government involvement in food production and distribution became even more necessary with the Green Revolution that firstly, destroyed regional food security based on diverse cereals and replaced it with just wheat and rice; secondly, concentrated the production of these cereals in just two states—Punjab and Haryana—and thirdly, forced the farmer into the vicious treadmill of costly input (seeds, chemicals water) intensive agriculture.

#### Prefer this evidence

#### It means yields are irrelevant – more food isn’t the solution, food grown for local consumption is, which necessitates organic farming

#### The data analyze consumption which is a better indicator of hunger than the amount of food produced

#### It analyzes food prices which is a better indicator since food access is determined by how much people can afford, not just how much there is

#### this is confirmed by a comprehensive study – poverty is the root cause of hunger, not access to food

Gonzalez 7 [(Carmen, Fulbright Scholar in Argentina, a Visiting Fellow at Cambridge University in the United Kingdom, a Visiting Professor at the Hopkins-Nanjing Center in Nanjing, China, Chair of the Environmental Law Section of the Association of American Law Schools) “Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens” A Center for Progressive ReformWhite Paper April 2007] AT

The Green Revolution was an immense success from the standpoint of food production,76 but it exacerbated hunger in the developing world by aggravating poverty and inequality.77 First, the Green Revolution was inherently biased against poor farmers in developing countries because the new seeds only produced high yields in response to the application of expensive inputs unaffordable to many farmers, including synthetic fertilizers, chemical pesticides, and irrigation systems.78 Second, the increase in food production resulting from the Green Revolution depressed agricultural prices, and thus deprived small farmers in developing countries of the cash income necessary to purchase agricultural inputs, pay taxes, and purchase goods not produced on the farm.79 Many small farmers abandoned the land, and rural poverty and hunger increased.80 Indeed, one review of over 300 published reports on the Green Revolution concluded that 80 percent of these reports found that the Green Revolution aggravated rural poverty and inequality in developing countries.81 Third, the Green Revolution’s emphasis on increasing food production was often promoted as an alternative to land reform and other redistributive measures82 – the very reforms that have been credited in subsequent studies with poverty alleviation, rural development, and enhanced food security in the developing world.83 The pauperization of small farmers in the developing world was exacerbated by United States Public Law 480 (the so-called “Food for Peace Program”),84 which depressed agricultural prices in developing countries by making U.S. surplus agricultural production available to developing countries at reduced prices or free of charge as food aid.85 Furthermore, farmers in the developing world were harmed by the lavish agricultural subsidies maintained by the United States and other industrialized countries (which placed additional downward pressure on world agricultural commodity prices) and by the tariff and non-tariff import barriers that impeded developing country farmers from obtaining access to developed country markets.86 In sum, the Green Revolution, Public Law 480, and the subsidies and import barriers maintained by the United States and other industrialized countries increased hunger in the developing world by depressing food prices, rendering small farmers destitute, and depriving developing countries of badly needed export earnings.87

### Land Turn

#### Organics reduces land usage, which outweighs their link since land is limited making industrial ag unsustainable, and the increased research resulting from the plan increases yields

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

Our results suggest that organic methods of food production can contribute substantially to feeding the current and future human population on the current agricultural land base, while maintaining soil fertility. In fact, the models suggest the possibility that the agricultural land base could eventually be reduced if organic production methods were employed, although additional intensification via conventional methods in the tropics would have the same effect. Our calculations probably underestimate actual output on many organic farms. Yield ratios were reported for individual crops, but many organic farmers use polycultures and multiple cropping systems, from which the total production per unit area is often substantially higher than for single crops 48,58. Also, there is scope for increased production on organic farms, since most agricultural research of the past 50 years has focused on conventional methods. Arguably, comparable efforts focused on organic practices would lead to further improvements in yields as well as in soil fertility and pest management. Production per unit area is greater on small farms than on large farms in both developed and developing countries59; thus, an increase in the number of small farms would also enhance food production. Finally, organic production on average requires more hand labor than does conventional production, but the labor is often spread out more evenly over the growing season25,60–62. This requirement has the potential to alleviate rural unemployment in many areas and to reduce the trend of shantytown construction surrounding many large cities of the developing world. Pg. 94

#### Land scarcity drives instability – this controls the stronger link to their impact

Brown 11 – (Lester R. is the President of the Earth Policy Institute, “The New Geopolitics of Food,” May 2011, <http://www.foreignpolicy.com/articles/2011/04/25/the_new_geopolitics_of_food?page=full>, Accessed Date: 3-15-13 y2k

The potential for conflict -- and not just over water -- is high. Many of the land deals have been made in secret, and in most cases, the land involved was already in use by villagers when it was sold or leased. Often those already farming the land were neither consulted about nor even informed of the new arrangements. And because there typically are no formal land titles in many developing-country villages, the farmers who lost their land have had little backing to bring their cases to court. Reporter John Vidal, writing in Britain's Observer, quotes Nyikaw Ochalla from Ethiopia's Gambella region: "The foreign companies are arriving in large numbers, depriving people of land they have used for centuries. There is no consultation with the indigenous population. The deals are done secretly. The only thing the local people see is people coming with lots of tractors to invade their lands." Local hostility toward such land grabs is the rule, not the exception. In 2007, as food prices were starting to rise, China signed an agreement with the Philippines to lease 2.5 million acres of land slated for food crops that would be shipped home. Once word leaked, the public outcry -- much of it from Filipino farmers -- forced Manila to suspend the agreement. A similar uproar rocked Madagascar, where a South Korean firm, Daewoo Logistics, had pursued rights to more than 3 million acres of land. Word of the deal helped stoke a political furor that toppled the government and forced cancellation of the agreement. Indeed, few things are more likely to fuel insurgencies than taking land from people. Agricultural equipment is easily sabotaged. If ripe fields of grain are torched, they burn quickly. Not only are these deals risky, but foreign investors producing food in a country full of hungry people face another political question of how to get the grain out. Will villagers permit trucks laden with grain headed for port cities to proceed when they themselves may be on the verge of starvation? The potential for political instability in countries where villagers have lost their land and their livelihoods is high. Conflicts could easily develop between investor and host countries. These acquisitions represent a potential investment in agriculture in developing countries of an estimated $50 billion. But it could take many years to realize any substantial production gains. The public infrastructure for modern market-oriented agriculture does not yet exist in most of Africa. In some countries it will take years just to build the roads and ports needed to bring in agricultural inputs such as fertilizer and to export farm products. Beyond that, modern agriculture requires its own infrastructure: machine sheds, grain-drying equipment, silos, fertilizer storage sheds, fuel storage facilities, equipment repair and maintenance services, well-drilling equipment, irrigation pumps, and energy to power the pumps. Overall, development of the land acquired to date appears to be moving very slowly. So how much will all this expand world food output? We don't know, but the World Bank analysis indicates that only 37 percent of the projects will be devoted to food crops. Most of the land bought up so far will be used to produce biofuels and other industrial crops. Even if some of these projects do eventually boost land productivity, who will benefit? If virtually all the inputs -- the farm equipment, the fertilizer, the pesticides, the seeds -- are brought in from abroad and if all the output is shipped out of the country, it will contribute little to the host country's economy. At best, locals may find work as farm laborers, but in highly mechanized operations, the jobs will be few. At worst, impoverished countries like Mozambique and Sudan will be left with less land and water with which to feed their already hungry populations. Thus far the land grabs have contributed more to stirring unrest than to expanding food production. And this rich country-poor country divide could grow even more pronounced -- and soon. This January, a new stage in the scramble among importing countries to secure food began to unfold when South Korea, which imports 70 percent of its grain, announced that it was creating a new public-private entity that will be responsible for acquiring part of this grain. With an initial office in Chicago, the plan is to bypass the large international trading firms by buying grain directly from U.S. farmers. As the Koreans acquire their own grain elevators, they may well sign multiyear delivery contracts with farmers, agreeing to buy specified quantities of wheat, corn, or soybeans at a fixed price. Other importers will not stand idly by as South Korea tries to tie up a portion of the U.S. grain harvest even before it gets to market. The enterprising Koreans may soon be joined by China, Japan, Saudi Arabia, and other leading importers. Although South Korea's initial focus is the United States, far and away the world's largest grain exporter, it may later consider brokering deals with Canada, Australia, Argentina, and other major exporters. This is happening just as China may be on the verge of entering the U.S. market as a potentially massive importer of grain. With China's 1.4 billion increasingly affluent consumers starting to compete with U.S. consumers for the U.S. grain harvest, cheap food, seen by many as an American birthright, may be coming to an end. No one knows where this intensifying competition for food supplies will go, but the world seems to be moving away from the international cooperation that evolved over several decades following World War II to an every-country-for-itself philosophy. Food nationalism may help secure food supplies for individual affluent countries, but it does little to enhance world food security. Indeed, the low-income countries that host land grabs or import grain will likely see their food situation deteriorate.

### Industrial Ag Raises Prices

#### Creates severe instability and a cycle of neolib

Timms 8 [(Benjamin F. Timms, Social Sciences Department, California Polytechnic State University) “Development theory and domestic agriculture in the Caribbean: recurring crises and missed opportunities” Caribbean Geography 2008 15(2)] AT

The Global Food Crisis: an opportunity for domestic agriculture? While the results of neoliberalism have damaged the agricultural sector, recently the logic of profit has proven to be dangerously unstable as well. The past two years have seen a dramatic increase in food prices, creating what the World Bank has termed a global food crisis as the international food price index rose 82 percent between March of 2006 and March of2008 (World Bank, 2008). Of special importance are basic grains such as rice which has tripled in price between January and May of2008 (Walt, 2008), wheat which is up 130 percent from 2007 to 2008, and the price of maize which rose 30 percent in the same time period (IF AD, 2008). Such developments create extreme food insecurity, and often political instability as evident in Haiti, for regions reliant on food imports such as the Caribbean. The typical reasons given for the current food crisis include the effects ofrising oil prices raising costs o f production o f agricultural inputs and transport, a resultant rise in the conversion of maize into ethanol, rising demand from emerging markets such as China and India, the change in global diets toward grain-intensively produced meats, crop failures from droughts and flooding, and even the increase in shipping costs attribut­ able to the repositioning ofocean freight toward Asia (Walt, 2008; World Bank, 2008). While the number is still debatable, the expansion ofbio-fuels has been blamed for 75 percent ofthe rise in global food prices as maize is diverted from the dinner table to gas tanks (Chakrabortty, 2008). Yet there are deeper underlying reasons for this crisis. The structural contradictions of industrial agriculture have resulted in overproduction as an outcome of technological competition, subsidies, protectionist trade policies, and corporate-based integrated agribusiness (Goodman & Redclift, 1990). Overproduction created a crisis of falling prices, and to mediate the oversupply the markets in the developing world were accessed through structural adjustment liberalisation. However, as can be seen, this has damaged local production and replaced it with cheap imports, up until the present. The process by which this occurs can be considered an example of 'dumping', whereby goods are sold at below fair market value (due to subsidies) to drive out competition and create a monopoly (Khaira & Deep Ford, 2007; Stiglitz, 2003). While anti-dumping laws in the United SUites have been created to protect competition, they do not apply when accessing markets in less economically and politically influential parts of the world. However, while past food crises were cyclical and temporary, the World Bank claims the contemporary factors contributing to high food prices are structural and economic simulations point toward the maintenance of high prices in the foreseeable future (World Bank, 2008).

### Studies

#### 1. Centuries of history are on our side—agroecology provides food security.

Altieri 9—Professor of Agroecology at University of California, Berkeley [Miguel A. Altieri (Ph.D. in Entomology from the University of Florida), “Agroecology, Small Farms, and Food Sovereignty,” Monthly Review, 2009, Volume 61, Issue 03 (July-August), http://monthlyreview.org/2009/07/01/agroecology-small-farms-and-food-sovereignty]

For centuries the agricultures of developing countries were built upon the local resources of land, water, and other resources, as well as local varieties and indigenous knowledge. This has nurtured biologically and genetically diverse smallholder farms with a robustness and a built-in resilience that has helped them to adjust to rapidly changing climates, pests, and diseases.5 The persistence of millions of agricultural hectares under ancient, traditional management in the form of raised fields, terraces, polycultures (with a number of crops growing in the same field), agroforestry systems, etc., document a successful indigenous agricultural strategy and constitutes a tribute to the “creativity” of traditional farmers. These microcosms of traditional agriculture offer promising models for other areas because they promote biodiversity, thrive without agrochemicals, and sustain year-round yields. The new models of agriculture that humanity will need to include forms of farming that are more ecological, biodiverse, local, sustainable, and socially just. They will be rooted in the ecological rationale of traditional small-scale agriculture, representing long established examples of successful community-based local agriculture. Such systems have fed much of the world for centuries and continue to feed people in many parts of the planet.6

#### 2. A study based on a massive dataset confirm organics can profitably feed the world.

Horlings & Marsden 11—Lecturer in Rural Sociology Group, Wageningen University & Director of Sustainable Places Research Institute, Cardiff University [Dr. L.G. Horlings & T.K. Marsden, “Towards the real green revolution? Exploring the conceptual dimensions of a new ecological modernisation of agriculture that could ‘feed the world’” Global Environmental Change, Volume 21, Issue 2, May 2011, Pages 441–452]

During an international conference on organic agriculture and food security in 2007 in Italy it was stated that organic agriculture could produce enough food on a global per capita basis (Halberg et al., 2007; Scialabba, 2007), based on models of Badgley et al. (2007) and Halberg et al. (2007). Badgley et al. compared yields of organic versus conventional or low-intensive food production for a global dataset of 293 examples and estimated the average yield ratio organic: non-organic of different food categories for the developed and the developing world. For most food categories, the average yield ratio was slightly <1.0 for studies in the developed world and >1.0 for studies in the developing world. High yield ratios in the developing world are obtained when farmers incorporate intensive agro-ecological techniques such as crop rotation, cover cropping, agro-forestry, addition of organic fertilizers or more efficient water management (Badgley et al., 2007, p. 92). An FAO analysis based on more than 50 cases in the USA and Europe, and just over a dozen studies in developing countries, showed that organic farms are more economically profitable, despite frequent yield decrease (Nemes, 2009). Higher outcomes are due to premium prices and predominantly lower production costs. These conclusions can also be drawn from studies in developing countries, but there, higher yields combined with high premiums are the underlying cause for higher relative profitability. Pg.446-447

### Trick---Break Yield Limits

#### Agroecology will break through conventional yield limits – prefer since it indicts the yield limits their studies use to make predictions

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

The most unexpected aspect of this study is the consistently high yield ratios from the developing world (Table A1, Appendix 1). These high yields are obtained when farmers incorporate intensive agroecological techniques, such as crop rotation, cover cropping, agroforestry, addition of organic fertilizers, or more efficient water management 16,39. In some instances, organic-intensive methods resulted in higher yields than conventional methods for the same crop in the same setting (e.g., the system of rice intensification (SRI) in ten developing countries39). Critics have argued that some of these examples exceed the intrinsic yield limits set by crop genetics and the environmental context40. (Such controversy surrounds the ‘SRI’ and our data include studies from both sides of this controversy.) Yet alternative agricultural methods may elicit a different pathway of gene expression than conventional methods do41. Thus, yield limits for conventionally grown crops may not predict the yield limits under alternative methods. Pg. 92

### Trick---Land Usage and Research

#### Organics increase land use efficiency, which outweighs since land is limited making industrial ag unsustainable, and the increased research resulting from the plan increases yields beyond what studies measure

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

Our results suggest that organic methods of food production can contribute substantially to feeding the current and future human population on the current agricultural land base, while maintaining soil fertility. In fact, the models suggest the possibility that the agricultural land base could eventually be reduced if organic production methods were employed, although additional intensification via conventional methods in the tropics would have the same effect. Our calculations probably underestimate actual output on many organic farms. Yield ratios were reported for individual crops, but many organic farmers use polycultures and multiple cropping systems, from which the total production per unit area is often substantially higher than for single crops 48,58. Also, there is scope for increased production on organic farms, since most agricultural research of the past 50 years has focused on conventional methods. Arguably, comparable efforts focused on organic practices would lead to further improvements in yields as well as in soil fertility and pest management. Production per unit area is greater on small farms than on large farms in both developed and developing countries59; thus, an increase in the number of small farms would also enhance food production. Finally, organic production on average requires more hand labor than does conventional production, but the labor is often spread out more evenly over the growing season25,60–62. This requirement has the potential to alleviate rural unemployment in many areas and to reduce the trend of shantytown construction surrounding many large cities of the developing world. Pg. 94

### Extra Studies

#### There’s a massive yield increase—a study of 208 projects prove.

Altieri et al. 11—Professor of Agroecology at University of California, Berkeley [Miguel A. Altieri (Ph.D. in Entomology from the University of Florida), Fernando R. FunesMonzote (Researcher at Experimental Station Indio Hatuey, University of Matanzas, Cuba & Paulo Petersen (Agronomist and executive director of Agricultura Familiar e Agroecologia, a prominent Brazilian NGO) “Agroecologically efficient agricultural systems for smallholder farmers: contributions to food sovereignty,” Agronomy for Sustainable Development, Accepted: 21 November 2011, pg. http://agroeco.org/wp-content/uploads/2009/11/Altieri-Funes-Petersen-Palencia.pdf]

The analysis of dozens of farmer-led and NGO-led agroecological projects show convincingly that agroecological systems are not limited to producing low outputs, as some critics have asserted. Increases in production of 50–100% are fairly common with most alternative production methods. In some of these systems, yields for crops that the poor rely on most—rice, beans, maize, cassava, potatoes, and barley—have been increased by several-fold, relying on labor and know-how more than on expensive purchased inputs, and capitalizing on processes of intensification and synergy (Uphoff 2002). In a study of 208 agroecologically based projects and/or initiatives throughout the developing world, Pretty et al. (2003) documented clear increases in food production over some 29 million ha, with nearly nine million households benefiting from increased food diversity and security. Promoted sustainable agriculture practices led to 50–100% increases in per hectare food production (about 1.7 Mg/year/household) in rain-fed areas typical of small farmers living in marginal environments; that is an area of about 3.58 million ha, cultivated by some 4.42 million farmers. Such yield enhancements are a true breakthrough for achieving food security among farmers isolated from mainstream agricultural institutions.

#### Our polycultures have a substantial yield advantage.

Altieri 9—Professor of Agroecology at University of California, Berkeley [Miguel A. Altieri (Ph.D. in Entomology from the University of Florida), “Agroecology, Small Farms, and Food Sovereignty,” Monthly Review, 2009, Volume 61, Issue 03 (July-August), http://monthlyreview.org/2009/07/01/agroecology-small-farms-and-food-sovereignty]

Traditional multiple cropping systems provide as much as 20 percent of the world food supply. Polycultures constitute at least 80 percent of the cultivated area of West Africa, while much of the production of staple crops in the Latin American tropics also occurs in polycultures. These diversified farming systems in which the small-scale farmer produces grains, fruits, vegetables, fodder, and animal products in the same field or garden out-produce the yield per unit of single crops such as corn grown alone on large-scale farms. A large farm may produce more corn per hectare than a small farm in which the corn is grown as part of a polyculture that also includes beans, squash, potatoes, and fodder. But, productivity in terms of harvestable products per unit area of polycultures developed by smallholders is higher than under a single crop with the same level of management. Yield advantages can range from 20 percent to 60 percent, because polycultures reduce losses due to weeds (by occupying space that weeds might otherwise occupy), insects, and diseases (because of the presence of multiple species), and make more efficient use of the available resources of water, light, and nutrients.11

#### Intensification of methods increase yields.

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

Studies in the global south usually demonstrate increases in yields following conversion to organic methods (Table 1C), but these studies are not comparable with those in the developed world. At present, agriculture in developing countries is generally less intensive than in the developed world. Organic production is often compared with local, resource-poor methods of subsistence farming, which may exhibit low yields because of limited access by farmers to natural resources, purchased inputs, or extension services. While adoption of green-revolution methods has typically increased yields, so has intensification by organic methods26. Such methods more often result in non-certified than in certified organic production, since most food produced is for local consumption where certification is not at issue27. Data from these studies are relevant for our inquiry, which seeks quantitative comparisons between organic production and prior methods, whether by conventional or subsistence practices, since both prevailing methods contribute to global food production. Pg. 88

#### Organics can feed the world—it can provide the daily caloric intake.

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

Both models suggest that organic methods could sustain the current human population, in terms of daily caloric intake (Table 5). The current world food supply after losses19 provides 2786 kcal person-1 day-1. The average caloric requirement for a healthy adult38 is between 2200 and 2500 kcal day-1. Model 1 yielded 2641 kcal person-1 day-1, which is above the recommended value, even if slightly less than the current availability of calories. Model 2 yielded 4381 kcal person-1 day-1, which is 57% greater than current availability. This estimate suggests that organic production has the potential to support a substantially larger human population than currently exists. Significantly, both models have high yields of grains, which constitute the major caloric component of the human diet. Under Model 1, the grain yield is 93% that of current production. Under Model 2, the grain yield is 145% that of current production (Table 5). Pg. 92

#### Organics can meet our global food needs.

Badgley et al 7—Professor of Ecology and Evolutionary biology at University of Michigan [Catherine Badgley, Jeremy Moghtader (Professor of Natural Resources and Environment at University of Michigan), Eileen Quintero (Professor of Natural Resources and Environment at University of Michigan, Emily Zakem (Professor Art and Design at University of Michigan), M. Jahi Chappell (Professor of Ecology and Evolutionary Biology at University of Michigan), Katia Avile´s-Va´zquez (Professor of Natural Resources and Environment at University of Michigan), Andrea Samulon (Professor of Natural Resources and Environment at University of Michigan) and Ivette Perfecto (Professor of Natural Resources and Environment at University of Michigan), “Organic agriculture and the global food supply,” Renewable Agriculture and Food Systems: 22(2); 2007 pg. 86–108]

The Millennium Ecosystem Assessment17 recommends the promotion of agricultural methods that increase food production without harmful tradeoffs from excessive use of water, nutrients, or pesticides. Our models demonstrate that organic agriculture can contribute substantially to a more sustainable system of food production. They suggest not only that organic agriculture, properly intensified, could produce much of the world’s food, but also that developing countries could increase their food security with organic agriculture. The results are not, however, intended as forecasts of instantaneous local or global production after conversion to organic methods. Neither do we claim that yields by organic methods are routinely higher than yields from green-revolution methods. Rather, the results show the potential for serious alternatives to green revolution agriculture as the dominant mode of food production.

In spite of our optimistic prognosis for organic agriculture, we recognize that the transition to and practice of organic agriculture contain numerous challenges— agronomically, economically, and educationally. The practice of organic agriculture on a large scale requires support from research institutions dedicated to agroecological methods of fertility and pest management, a strong extension system, and a committed public. But it is time to put to rest the debate about whether or not organic agriculture can make a substantial contribution to the food supply. It can, both locally and globally. The debate should shift to how to allocate more resources for research on agroecological methods of food production and how to enhance the incentives for farmers and consumers to engage in a more sustainable production system. Finally, production methods are but one component of a sustainable food system. The economic viability of farming methods, land tenure for farmers, accessibility of markets, availability of water, trends in food consumption, and alleviation of poverty are essential to the assessment and promotion of a sustainable food system. Pg. 94

#### We increase crop productivity—a 208 project study proves.

Horlings & Marsden 11—Lecturer in Rural Sociology Group, Wageningen University & Director of Sustainable Places Research Institute, Cardiff University [Dr. L.G. Horlings & T.K. Marsden, “Towards the real green revolution? Exploring the conceptual dimensions of a new ecological modernisation of agriculture that could ‘feed the world’” Global Environmental Change, Volume 21, Issue 2, May 2011, Pages 441–452]

Pretty and Hine (2001) undertook an extensive study of 208 agro-ecological projects in 52 countries, which showed how farmers have improved crop productivity and at the same time increased both water use efficiency, carbon sequestration, and reduced pesticide use. Their dataset contains reliable data on yield changes in 89 projects. The proportional yield increases were generally: 50–100% for rain-fed crops (though considerably greater in a few cases) and 5–10% for irrigated crops (through generally starting from a higher absolute yield base). The relative yield increases are greater at lower yields, indicating greater benefits for poor farmers and for those missed by the recent decades of modern agricultural development.

The team found improvements are occurring through four different mechanisms:

- Intensification of a single component of a farm system.

- Addition of a new productive element to a farm system.

- Better use of nature to increase total farm production.

- Improvements in per hectare yield of staples through the introduction of new regenerative elements into farm systems.

While this needs far more in-depth treatment than space in this paper allows, it is clear that on different continents we can see examples of farming systems that are (more) locally embedded in communities, more resilient towards external threats and global processes, more environmentally friendly, contributing to biodiversity and, not the least important, productive in terms of yields.

Some of the most path-breaking examples of sustainable agriculture come from developing countries in Africa, Asia and Latin America. Some of the most significant are described below by focusing on the ecological dimension and productivity (see also FAO, 2002). Pg. 447

#### High yields without chemical inputs.

Altieri et al. 11—Professor of Agroecology at University of California, Berkeley [Miguel A. Altieri (Ph.D. in Entomology from the University of Florida), Fernando R. FunesMonzote (Researcher at Experimental Station Indio Hatuey, University of Matanzas, Cuba & Paulo Petersen (Agronomist and executive director of Agricultura Familiar e Agroecologia, a prominent Brazilian NGO) “Agroecologically efficient agricultural systems for smallholder farmers: contributions to food sovereignty,” Agronomy for Sustainable Development, Accepted: 21 November 2011, pg. http://agroeco.org/wp-content/uploads/2009/11/Altieri-Funes-Petersen-Palencia.pdf]

Increasing evidence shows that most peasant systems are productive despite their low use of chemical inputs. In the Amazon, the Kayapo yields are roughly 200% higher than colonist systems and 175 times that of livestock. Generally, agricultural labor has a high return per unit of input. The energy return to labor expended in a typical highland Mayan maize farm is high enough to ensure continuation of the present system. To work a hectare of land, which normally yields 4.2 G calories, requires some 395 h; thus, an hour’s labor produces about 10.7 M calories. A family of three adults and seven children eat about 4.8 G calories of maize per year, thus current systems provide food security for a typical family of five or seven people. Also in these systems, favorable rates of return between inputs and outputs in energy terms are realized. On Mexican hillsides, maize yields in hand-labor dependent systems are about 1,940 kg/ha, exhibiting an output/input ratio of 11:1. In Guatemala, similar systems yield about 1,066 kg/ha of maize, with an energy efficiency ratio of 4.84. Yield per seed planted vary from 130 to 200. When animal traction is utilized, yields do not necessarily increase but the energy efficiency drops to values ranging from 3.11 to 4.34. When fertilizers and other agrochemicals are utilized yields can increase to levels of 5–7 t/ha, but energy ratios are highly inefficient (less than 2.5). In addition, most peasants are poor and generally cannot afford such inputs unless agrochemicals are subsidized (Pimentel and Pimentel 1979). In Cuba, small farmers using agroecological methods obtain yields per hectare sufficient to feed about 15–20 people per year with energy efficiencies of no less than 10:1 (Table 1).

#### Sustainable ag is 80% more productive.

Gonzalez 11—Professor of law at Seattle University [Carmen Gonzalez, “CLIMATE CHANGE, FOOD SECURITY, AND AGROBIODIVERSITY: TOWARD A JUST, RESILIENT, AND SUSTAINABLE FOOD SYSTEM,” Fordham Environmental Law Review, Vol. 22 (2011)]

In addition, sustainable agriculture is highly productive. Sustainable agriculture can produce enough food on a global per capita basis to sustain both current and projected future populations without increasing the amount of land devoted to agricultural production.154 Indeed, sustainable agriculture in the Global South is at least eighty percent more productive than conventional agriculture.155 Numerous studies have concluded that sustainable agriculture has significantly increased agricultural yields in Asia, Africa and Latin America, increased the incomes of small farmers, benefited the environment, reduced dependence on external inputs, and kept alive rural communities’ deep reservoir of traditional knowledge.156 pg. 515

## Poverty DA

### Poverty

#### Industrial ag has worsened local poverty and economic inequality

Setboonsarg 6 [(Sununtar, Senior Research Fellow at Asian Development Bank Institute) “Organic Agriculture, Poverty Reduction, and the Millennium Development Goals”, ADB Institute Discussion Paper No. 54, August 2006] DD

In the past few decades, massive investment has gone into promoting Green Revolution technologies based on the use of chemicals, extensive irrigation, and the use of high yielding varieties, including genetically modified (GM) plant varieties. While there is no doubt that this strategy has led to substantial productivity gains over the past 50 years and has eliminated starvation in many countries, recent evidence shows that the Green Revolution has not been effective as a strategy for poverty reduction for majority of the world’s rural poor. While Green Revolution technologies will remain as the major production system in the world, **there is growing evidence that the Green Revolution has**, at its worst**, increased inequality, worsened absolute poverty**, **and** resulted in **environmental degradation** (IFPRI, 2002). **First** of all, while Green Revolution **methods have been effective in increasing yields in agriculturally optimal areas, they have been less effective in** the case of marginalized and **resource-poor areas where farmers have no access to modern inputs and technologies** 4 . (IFAD, 2005b; Scialabba and Hattam, 2002). To quote the FAO (2000): “Even in Green Revolution regions, numerous **small, poorly equipped** and very **low-income farms were unable to** gain **access** to the **new means of production. Unable to invest** and progress, **they saw their incomes fall as a result of the** drop inreal **agricultural** prices**. Many of them sank to levels of extreme poverty and were eliminated.** Above all, vast hilly and barely accessible regions of rainfed or scarcely irrigated agriculture were essentially bypassed by the Green Revolution. The varieties cultivated in these regions (millet, sorghum, taro, sweet potato, yam, plantain, cassava) benefited marginally, if at all, from selection. The same was true for varieties of major cereals (wheat, maize, rice) that were adapted to difficult local conditions (altitude, drought, salinization, aridity, waterlogging). For example, the average output of millet throughout the world today is barely 800 kg/ha, and that of sorghum is less than 1 500 kg/ha. These so-called "orphan" varieties, having been bypassed by the selection process, make the use of fertilizer and phytosanitary inputs unprofitable, which only adds to the problems of the regions where they are grown.” Second**,** even in those areas which enjoyed substantial productivity gains, **in the long-run** these **gains did not always translate into sustainable improvements in** rural **poverty.** On the one hand, real declines in the prices of agricultural commodities and increasing crop failures due to pests and diseases resulted in a significant fall in farmers’ revenues. **Because high yielding varieties** often **need** regular or **increasing inputs of chemical fertilizers and pest control, farmers had to borrow heavily** in order **to sustain productivity. In the long-run, this cost-price squeeze and the declining price** trend **of commodities in the world market led to significant declines in** terms of **trade and income**s **of farmers.** Third and more importantly, the Green Revolution’s **gains** have **come at the cost of** extensive **environmental degradation and** considerable **health problems due to exposure to agro-chemicals.** As IFPRI ( 2002) writes: ”**Excessive** and inappropriate **use of fertilizers and pesticides has polluted waterways, poisoned agricultural workers, and killed beneficial insects and other wildlife.** Irrigation practices have led to salt build-up and eventual abandonment of some of the best agriculture lands. Heavy dependence on a few major cereal varieties has led to the loss of biodiversity on farm”. And since these costs are not internalized in the price of food, it is the **taxpayers and future generations** who willend up **foot**ing **the bill.**

#### Organic ag contributes more to the local economy and has a more lasting economic effect than IA

Setboonsarg 6 [(Sununtar, Senior Research Fellow at Asian Development Bank Institute) “Organic Agriculture, Poverty Reduction, and the Millennium Development Goals”, ADB Institute Discussion Paper No. 54, August 2006] DD

Organic agriculture may generate secondary effects in the broader rural economy. Lohr (2002) reports that U.S. **counties with organic farms have stronger farm economies and contribute more to local economies through total sales, net revenue, farm value, taxes paid, hired labor, purchases of inputs, and repair and maintenance services.** Horrigan, et al., (2003) likewise argue that **profits generated by small-scale producers are more likely to remain in the community and create multiplier effects in the local economy.**

#### Organic ag improves income of small farmers better than industrial ag

Setboonsarg 6 [(Sununtar, Senior Research Fellow at Asian Development Bank Institute) “Organic Agriculture, Poverty Reduction, and the Millennium Development Goals”, ADB Institute Discussion Paper No. 54, August 2006] DD

**There is substantial evidence linking OA with improvements in the profitability and income of poor farmers in developing countries.** Case studies by UNESCAP (2002) show that certain **organic farmers’** groups **were able to double their income due to the lower cost of organic inputs and lower credit costs.** More importantly, studies show that OA has been particularly profitable for smallholders. IFAD’s study in Latin Amer ica and the Caribbean (2003) reveals that **OA has benefited smallholders the most**. **In five** out **of** the **six countries covered by the study, small farmers dominated organic production for export as well as domestic markets. In Mexico in 2000, smallholders represented 98.6% of all organic producers, accounting for 84.2% of the area under organic production and generating 68.8% of the exports of organic products.** A more recent study by Setboonsarng, et al., (2005) on organic rice contract farming likewise finds that **small organic farms are more profitable and efficient than larger farms**, and that in general, organic rice contract farming is more profitable than conventional non-contract farming by a significant margin for all scales of operation, even when the non-cash costs are included.

#### Industrial ag. is infeasible in rural poor areas

Setboonsarg 6 [(Sununtar, Senior Research Fellow at Asian Development Bank Institute) “Organic Agriculture, Poverty Reduction, and the Millennium Development Goals”, ADB Institute Discussion Paper No. 54, August 2006] DD

During the past few decades, the Green Revolution has brought about significant changes in the world’s food production systems. It is recognized that while **the Green Revolution** has benefited better-off farmers in irrigated areas, it **has by-passed the poor in marginal areas.** Low-external input **sustainable ag**riculture (LEISA) **has** long **been viewed as an alternative for areas where** the **Green Revolution technologies are not feasible.** More recently, one particular alternative that has gained interest is organic agriculture 1 , due to its commercial viability. **Most farmers in marginal areas practice traditional agriculture methods using very little or no agrochemicals. By adopting organic agriculture** (OA), **which requires less financial inputs while placing more reliance on natural and human resources, farmers could move towards more sustainable agricultur**al **practices** (Scialabba, 2000). **Improving the agricultural production system in marginal areas in a sustainable manner and providing market access for the poor hold the key to the mass reduction of poverty.**

## Solvency

### A2 No Market for Organics

#### Empirically false

CBTF 8 [(CBTF UNEP-UNCTAD Capacity Building Task Force on Trade, Environment and Development) “Best Practices for Organic Policy What developing country Governments can do to promote the organic agriculture sector” United Nations Conference on Trade and Development United Nations Environment Programme, 2008] AT

The first organic markets developed in specialized health food shops and in other non-mainstream outlets. This has changed over the last 15 years, and normal supermarkets, as well as “organic supermarkets” (e.g. Whole Foods in the United States, Basic and Alnatura in Germany) in most countries from the Organization for Economic Cooperation and Development (OECD), sell organic products. Almost all major retailers and food companies in OECD countries are involved in the organic sector. In most cases, organic producers have to meet the same competitive parameters as their conventional counterparts regarding prices, logistics and packaging. Because of the stringent organic standards, organic producers often have fewer problems adapting themselves to other demanding standards such as EurepGAP. For example, traceability has already been part of the organic certification process for decades and is not perceived as a major obstacle to organic producers; the fact that no pesticides are used makes it easy to fulfil increasing demands that no pesticides be detected in products7 . Nevertheless, especially for small producers the demand for documentation and procedures in both organic and other systems can prove to be too demanding. In developed countries, there has lately been a move for more direct sales by small producers, something that has been supported by increased interest for local and regional food and discussions about “food miles”8 .

## Eco-Imperialism NC

### Analytics

#### Their argument does not apply at all to agriculture, where the plan doesn’t end resource extraction, only reforms it to be sustainable – the entire 1AC proved industrial agriculture is unsustainable and collapses in the status quo which non-uniques and turns the NC since some agriculture is better than none

### Poverty Turn

#### Organic ag is more consistent with local needs – the point is to shift from a model that exports to the 1st world, to a model that meets local consumption needs – key to solve hunger and food sovereignty, the principle that the developing world has a right not to starve

Shiva 4 [(Vandana, Indian environmental activist and anti-globalization author) “The future of food: countering globalisation and recolonisation of Indian agriculture” Futures 36 (2004) 715–732] AT

5. Globalisation and the creation of hunger Agribusiness is harvesting both the stocks and agricultural subsidies to gain through agricultural exports. The same companies that gained through deregulated imports are now also gaining through deregulated exports. Millions of Indians go to bed hungry, as the government has dismantled the PDS system, and taken affordable food out of the reach of millions. Foodgrain export is liberalisation’s answer to the problem of ‘‘over-procurement’’ from farmers while it will bring in much needed foreign exchange. However, ever since Indian agriculture was subjected to liberalisation, both the share of agriculture exports in India’s total exports as well as their value in hard cash has actually declined. The share of agricultural exports in India’s total exports declined from 20.33% in 1996–1997 to 18.25% in 1998–1999 and further to 14.04% in 2001–2002 (Table 1). 5.1. Foodgrain exports did not benefit the national exchequer Each period of large exports has been followed by acute food shortage, and India has had to import the same grain again, often at higher prices. For instance, India exported 2.5 lakh tonnes of wheat during 1987–1988, followed by an import of 18 lakh tonnes in 1988–1989 [17]. 5.2. Foodgrain exports did not benefit the farmer Wheat exports had an inflationary impact on domestic prices, although this did not benefit the farmers, as during the harvesting period the prices are kept low, and even MSP rates are not enforced. 5.3. Foodgrain exports: Redirecting subsidies from farmers to traders The push towards exports is neither aimed at helping farmers or the nation’s finances; rather, in accordance with the impetus of WTO’s Agreement on Agri- culture, it is a way of diverting support away from farmers towards traders. While the government dismantles procurement and public food distribution because they are considered subsidies to the people of the country, and are supposed to distort trade, it allows traders to buy bulk grains from its go downs at prices even lower than those offered to the poorest of the poor. Moreover, the annual budgets since liberalization having been adding to the subsidies for the corporate sector–tax holi- days for building silos and cold storages, incentives for exporting, subsidized trans- portation to the ports of the traders’ choice. The experience of the 2001 wheat export, for instance, reveals this. As against an economic cost of Rs 8300 per tonne to the FCI and an open market price of Rs 7000 per tonne, India was offered a price of Rs 4300 per tonne in international market in May 2001. The government allowed FCI to charge any price for exports, as long as it is not below the below poverty line’ (BPL) rate. In this scenario, Cargill has emerged as the biggest buyer of subsidised wheat being pushed by India into world markets [17]. The offtake price of wheat for export has also been allowed to far below the BPL price of Rs. 4150 per tonne, to Rs. 3960 per tonne. At the same time, it has increased the above poverty line’ (APL) issue prices of wheat to Rs. 610 per quin- tal, and for rice to Rs. 830 per quintal. This price increase will only ensure that PDS offtake will be even lower, so that buffer stocks for exports will be maintained [17]. Globalisation, as directed by the World Bank/IMF structural adjustment programmes and the WTO has seen a return of famine. The intensification of hunger over the last five years, even while grains are overflowing from the godowns can thus not be attributed to drought and climatic conditions alone, but to the policies that govern people’s access to food. The policy changes have consistently attempted to decrease the government’s role in ensuring food security and livelihood security for farmers in particular by calling measures meant to aid people as ‘trade distorting’ and demanding that these be scrapped. The anomaly of the co-existence of burgeoning food stocks and mass starvation is today, as in the late 19th century, the direct consequence of trade-driven agricultural policies. The 1877 Deccan famine killed over a million people; the trade liberalisation of the last decade of the 1990s has seen India step into the new millennium with over 50 million starving people and millions more with drastically decreasing access to food.1 An obvious example of the policy shift from people centred concerns to trade- and corporation-centred concerns is the fact that while farmers are not allowed by law to take their produce beyond their state borders, traders can pick them up any- where and take them anywhere. In fact, the government is building super high- ways, after forcibly taking away land from farmers and communities to connect centres of agricultural production to airports and ports, so that corporations can quickly transport these commodities for export. The policy changes induced by trade liberalisation include: dismantling the Food Corporation of India (FCI) and reduce its role in procure- ment from farmers; . removal of QRs on imports of food and agricultural products; . the amendment of the Public Distribution System, to cater only to the BPL cate- gory of the population; . increase in the central issue price, from Rs. 450/quintal in April 1995, to Rs. 682 quintal in April 1999, and to Rs. 900/quintal in 2000; and . increased price of food available through the targeted PDS to the BPL as a result of transferring 50% of the procurement and distribution costs of the government to this category. These changed policies have had disastrous impacts for both farmers and con- sumers. 5.3.1. Farmers . Government procurement centres refusing to purchase foodgrains from farmers. . The refusal of the government to enforce MSP on private traders and corpora- tions, forcing farmers into distress sale of foodgrains at far below production costs. . Dumping of cheap, subsidised agricultural products by other countries in the Indian market [5]. . Increasing price of farm inputs, including seeds [14]. . Liberalising seed regulations to allow private seed companies sell uncertified seed [11]. . Deepening of farmers’ debt, increased mortgages and land alienation, increased destitution, suicides and sale of body parts among farmers. The prosperity that globalisation was suppose to spread is fast proving to be elusive. Trade liberalisation and globalisation has resulted in thousands of farmers sacrificing their lives and livelihoods. In fact, the most prosperous state, also called the breadbasket of India, Punjab, has left behind Andhra Pradesh in the notorious distinction of farmers’ suicides [14]. 5.3.2. Consumers . Massive reduction in the number of people accessing food from the targeted PDS due to the inability of the government to identify the BPL category of people. . Inability of the majority of even the few BPL identified to purchase food-grain from Fair Price Shops due to increased prices. . Drastic increase in food prices—by over 60% since the initiation of trade liberal- isation measures, and over 200% in commodities like pulses.2 Reduced PDS off- take by states due to increased issue prices. The shift from PDS for all to Targeted PDS was justified on grounds of reducing government expenditure. However, with trade liberalisation, the PDS costs to government have risen from Rs. 5,166 crores in the mid 1990s to Rs. 9300 in 1999– 2000.3 While the government blames farmers for this increased expenditure, the primary reason is the increased cost of food to consumers as a result of policy changes, resulting in a drastic decline in purchases from the Fair Price Shops. 5.4. Declining food production Export-oriented agricultural policies that push the small farmer to destitution on the one hand, and promote cash cropping on the other, have resulted in a steady decline in food production since the early 1990s. The collapse of domestic support for food production (through dismantling the MSP, rising costs of inputs, crop failure due to uncertified seeds) in the late 1990s has intensified this shift, as farm- ers are desperate to recover their losses. For instance, there has been a decline in food production to the order of 12.8% in just one year, 2000–2001 [7]. 5.5. Declining food consumption A major impact of trade liberalisation policies has been a general lowering of food consumption. The per capita cereal consumption has declined from 17 kg per capita per month in the 1950s to 13.5 kg per capita per month in the 1990s [5]. The National Nutrition Monitoring Bureau 1997 data shows a declining trend in consumption in rural India, particularly in cereal and millets, the main source of energy for the poor, from 1990–1995. The National Sample Survey (NSS) rounds starting from the 38th round have documented the decline in cereal consumption 1992, following the implementation of SAPs.4 The most important reasons for the decline are: rising food prices, destruction of livelihoods, destruction of the PDS system and shift to export oriented crops. The reduced consumption on the one hand, and decline in production and pro- curement on the other are directly linked though the food and agricultural policies of the government. Colonialism had destroyed the food sovereignty of the country, forcing changes in cropping from food for local and regional food security to commercial crops. Rice particularly had become a commercial crop even within the country. The emphasis on foreign trade had resulted in large scale famines in the country, forc- ing Cornelius Walford to comment in 1879 in The Famines of the World—‘‘it is an anomaly that, with her famines on hand, India is able to supply food for other parts of the world’’ [5]. Following independence, the Government’s priority was to ensure that farmers would produce food and thus government procurement (to ensure both that farm- ers produced food, and got just price for it) and the public distribution system (to ensure that consumers got adequate food at affordable prices) were designed. The need for government involvement in food production and distribution became even more necessary with the Green Revolution that firstly, destroyed regional food security based on diverse cereals and replaced it with just wheat and rice; secondly, concentrated the production of these cereals in just two states—Punjab and Haryana—and thirdly, forced the farmer into the vicious treadmill of costly input (seeds, chemicals water) intensive agriculture.

### Culture Turn

#### Shifting away from industrial agriculture back to traditional, biodiverse, organic farming techniques is more consistent with the desires of developing countries – it is crucial to restoration of their culture

Pant and Ramisch 10 [(Laxmi PhD candidate at the University of Guelph, research focuses on innovation systems in agriculture with field research; and Joshua, Associate Professor, School of International Development & Global Studies, University of Ottawa) “Beyond Biodiversity: Culture in Agricultural Biodiversity Conservation in the Himalayan Foothills” Beyond the Biophysical Pg 73-97] AT

Abstract This chapter explores the cultural dimensions of agricultural biodiversity conservation through a case study of the relationships between caste-based food traditions and local varieties of rice and finger millet managed by smallholder subsistence farmers in the Himalayan foothills of western Nepal. The empirical material for this study is derived from interviews with primary stakeholders, a household survey, and direct observation of cultural practices and spiritual traditions of rural farming communities. The different caste-based food traditions in the study area relate directly to differential use and appreciation of the local landraces of both crops, which are in turn conserved or managed to varying degrees. The empirical data provide strong evidence that agro-biodiversity management is not simply an agronomic or biogenetic issue, but that cultural preferences and practices are central to the creation, maintenance, and ultimate viability of biodiversity in agroecosystems. These findings suggest that future conservation efforts must engage local communities and their cultures fully in agro-biodiversity management, through participatory plant breeding, increased awareness and marketing of landrace identity within com- modity supply chains, and through advocacy on behalf of smallholders’ rights. Introduction Cultural diversity and agricultural biodiversity are inextricably linked. The ecologically complex settings that gave birth to major ancient civilizations are also the centers of domestication for the crops that are still globally important today (Rhoades and Nazarea 1998). Human cultures and plant populations have coevolved to the point that cultural knowledge about production, processing, and storage are now essential to the survival of both domesticated crops and humans (Nazarea-Sandoval 1992). Domesticated crops by definition reflect human agency, shaped by a legacy of preferences that have valued or discarded species or varieties not just for their nutritive value but also for their taste, color, symbolism, or other contributions to daily social and cultural lives (Zimmerer 1991). While conventional agricultural science has been interested in the raw genetic material held and managed by farmers all over the world, it has been much less appreciative or understanding of how local knowledge and cultural practices have created or sustained this landrace1 diversity (Nazarea 1995). Indeed, positivist science strives to identify and isolate universal scientific principles from cultural practices and spiritual traditions, downplaying relationships between culture and agriculture in general, and culture and agricultural biodiversity in particular. While this paradigm has certainly furthered human understanding and manipulation of simple systems, the generalizations of positivist science are much less useful for generating practical prescriptions for sustainably managing complex natural systems (Gadgil et al. 1993). This chapter uses case study material from the rice and finger millet food traditions of Nepal to argue that agricultural biodiversity management must necessarily engage with local cultural knowledge and practices. This research employs Cernea’s (2005, p. 75) concept of culture in agriculture as, “a cluster of fundamental building blocks of agricultural production processes, rural [economic, social, cultural and spiritual] life, and their actors, whose understanding is indispensable for grasping the deeper essence of agriculture.” Taking this recognition that “agro-biodiversity” is not a purely biological phenomenon, but rather one that is culturally constructed and relevant to given cultural (sub) groupings, will present scientists, farmers, and other land managers with opportunities for new approaches to biodiversity conservation. These include: (i) crop improvement research that integrates conventional and alternative scientific traditions, such as participatory plant breeding (PPB) (Morris and Bellon 2004); (ii) strategies to better identify, protect, and promote local landraces and genetic diversity through dedicated market supply chains or “slow food” movements (Jones et al. 2003); and (iii) lobbying for the customary rights and intellectual property rights (IPRs)2 of ethnic and rural farming communities (Escobar 1998). The chapter begins with a review of the “cultural” dimension of agro-biodiversity management. After a brief overview of international treaties on agricultural and human cultural diversity management, the limitations of contemporary practices for addressing the cultural dimension in agro-biodiversity conservation are identified before moving to the empirical section. Case study data show how food traditions in Nepal relate to and maintain the genetic diversity of both rice (a high-status, prestigious crop) and finger millet (a lower-status crop) despite the availability of modern high-yielding crop varieties. Conclusions are drawn, with a series of policy suggestions for successful management of agricultural biodiversity and human cultural diversity. Culture in Agro-biodiversity Management The attributes of agro-biodiversity can be described at the genetic, species, and agroecosystem levels (IPGRI 2004). The genetic diversity of a crop manifests itself in variations such as plant height, spike length, and grain color of individuals within that species. A given population will therefore be heterogeneous with regard to these traits, which will be inherited by predictable proportions of the population as a whole and available for passing on to successive generations. At the agroecosystem level, agro-biodiversity encompasses not only the abundance and diversity of species – i.e. plants (crops, weeds, trees, etc.), humans, and nonhuman animals – but also the biophysical variations, such as upland and lowland conditions, irrigated and rain-fed, and arable farming and perennial vegetation. This agro-biological diversity interacts strongly with culture: culture shapes the environment and the environment in turn shapes cultural preferences. Biological diversity (from the genetic through to the landscape level) is directly affected and moulded by farmers’ practices and circumstances. At the same time, biological diversity constrains or facilitates the opportunities available to rural elements of society, from individual or household livelihoods through to wider communities or national economies. Because many of the planet’s areas with the highest biological diversity are inhabited by indigenous and traditional peoples, the 1988 Declaration of Belém by the International Congress of Ethnobiology claims an “inextricable link” between biological and cultural diversity. The term “biocultural diversity” has also been proposed to describe this intimate interrelationship (Posey 1999a), although it has been challenged as a term that does not reflect precisely on the nature of that relationship, and for seemingly privileging the analysis of “exotic” or isolated communities (Cocks 2006). Critics of agricultural modernization would argue more generally that trends towards industrial agriculture and monocultures of hybrid, “improved” crop varieties threaten not only the cultural and livelihood diversity of rural peoples but also the genetic, agro-biodiversity that has supported those societies (Shiva 1997; Altieri 1987).

### Neolib Turn [:40]

#### Export focused agriculture has made economies heavily dependent – industrial agriculture is a product of Western intervention to make the world dependent on the West – this delinks and turns the whole case

Timms 8 [(Benjamin F. Timms, Social Sciences Department, California Polytechnic State University) “Development theory and domestic agriculture in the Caribbean: recurring crises and missed opportunities” Caribbean Geography 2008 15(2)] AT

Precursor to Development: Colonial policies and the absence of domestic agriculture Economic policy in the British Caribbean during the early colonial period centred on the mercantilist doctrine of market protection. The strategy focused commodity trade on importing raw materials from the colonies and exporting manufacturers, creating a favourable balance oftrade for the benefit ofthe metropole (St Cyr, 1993). Production of foodstuffs in the colonies was discouraged as resources were focused on tropical export products while sustenance needs were met through importation of agricultural products produced in the temperate regions ofthe metropole. There were con\rary voices calling for diversified domestic production in the Caribbean, and a proposal to ban imported foodstuffs to force domestic production in the colonies was put before the British Parlia­ ment in 1698 (Williams, 1970). Predictably, this proposal was rejected on the basis that it would decrease land devoted to the prize tropical product of the period; namely sugar. During the majority of this period labour was provided through slavery, but even after emancipation the denial of land and other schemes forced the majority of the newly free labour-force to work on the plantations for the benefit of the metropole (Beckford, 1975; Best, 1975; MandIe, 1982). Industrialisation in Britain in the nineteenth century created a need for access to foreign markets and mercantilist market protection was abandoned in favour of Adam Smith's classical free trade economics, as evident in the repealing of protestionist duties on sugar in 1852 (Williams, 1970). For the Caribbean the result was largely the same as domestic agriculture was viewed as a sector ofdisadvantage and all efforts were focused on maximising the region's comparative advantage in sugar production for export. However, the result offree trade policies created a crisis for the British West Indian sugar industry where, by the 1890s, competition from other tropical colonies and sugar beet production in the temperate regions of Europe caused sugar prices to crash (Richardson, 2007). As a response the 1897 British Royal West Indies Commission, organised to assess the needs o f the Caribbean colonies, presented a critique o f the sugar plantocracy and endorsed the promotion ofsmall peasant farms (Williams, 1970). The Commission recommended the creation ofbotanic gardens on each ofthe islands, focused on econom­ ically valuable plants with agricultural extension agents to pass new technologies to the small farming sector. Henderson and Patton (1985) claimed success of these extension agents throughout the Lesser Antilles, albeit in terms of increased exports of vegetables with economic value. Yet this period of crisis created an opportunity to diversify and challenge the structural dominance ofthe plantation economy. For the most part the recommendations of the Commission were ignored as the colonial authorities gave domestic agriculture scant attention. Prior to emancipation slaves were at times permitted to work provision grounds and, post-emancipation, a peasant sector did emerge in the recesses where the plantations either broke down or neverreached (Beckford, 1975; Levitt & Best, 1975; Mintz, 1985). But the production of domestic agriculture was for the most part limited to familial consumption and informal trade. It was not until the advent ofthe domestic market that the small farming peasantry began to have a greater impact on Caribbean economies (Witter & Beckford, 1980). Geographically the market began a distribution network for domestic production which laid the groundwork for rural roads from hilly interiors to coastal centres of economic activity. Additionally, an interdependent relationship between capitalist plantations and the subsistence small farming sector developed through supplemental plantation field­ work for the farmers and foodstuffproduction to augment basic sustenance needs (Mintz, 1985; Witter & Beckford, 1980). Even with the concurrent evolution of a small farming peasantry, the end of the nineteenth century saw a region highly dependent on a declining sugar industry and imported foodstuffs. However, during World War II the blockage of shipping lanes created another crisis which provided an external impetus for the region to focus on satis­ fying basic needs (Taitt, 2007). The temporary disappearance of markets for sugar and supplies of basic foodstuffs resulted in a communal effort to produce for domestic demand, with the Caribbean largely feeding itself during the war (Jesse, 1994; Axline, 1984). The result suggested the possibility ofa Caribbean self-sufficient in food supply, albeit as a response to war imposed conditions. Development Theorised: W.A. Lewis and the inclusion of domestic agriculture It was in the post-World War II period that the era of formal development studies com­ menced. From within the Caribbean region re-emerged development theories justified to be appropriate to the particularities of the region, with the St Lucian born economist Sir Arthur Lewis arguably the most notable. Lewis detailed a dual economy for the Carib­ bean consisting ofa large subsistence sector and a small capitalist sector. The subsistence sector was considered unproductive as its marginal productivity was near zero due to the excessive amount of labour working on the small and base. Thus, labour could leave the subsistence sector without decreasing production or increasing the marginal wages. Meanwhile, the capitalist sector could increase profits through paying the low marginal wages detennined by the subsistence sector (Lewis, 1954). In effect, the large size of the subsistence sector created the conditions of a virtual unlimited supply of cheap labour which would contribute to capital accumulation and reinvestment in productive capacity (Lewis, 1954'; 1955). According to Lewis, the Caribbean islands could use the unlimited supply of cheap labour as a comparative advantage in attracting industries. In practical terms, initial efforts would be focused on manufacturing for export as it was the only sector capable of expanding without necessitating an expansion in domestic demand, particularly due to the small size ofdomestic markets and initially low wages (James, 1996). In relation, the lack of local capital and knowledge presupposed investment from foreign sources; although Lewis did prefer local capital ifavailable and felt it would eventually accumu­ late and be available for reinvestment (Figueroa, 1996). Meanwhile, the subsistence sector would shrink as agriculture modernised and became more productive through such investment (Lewis, 1954). By the time the condition of ~m unlimited supply of labour ended, due to the drying up ofavailable peasants to enter the workforce and the resultant rise in wages, capital accumulation and reinvestment in all sectors would create a balanced and modernised economy. Lewis's inclusion of domestic agriculture in his development theories is often overlooked as analysis focuses on aspects ofthe so-called 'industrialisation by invitation' model ofdevelopment (Beckford, 1972; Best, 1976). This is due to Lewis's dismissal of development that began with greater productivity in food for the home market since any increase in food production while other sectors remained stagnant would bankrupt the fanners for lack of growth in demand (Lewis, 1958). Further, the development process could not begin with agricultural exports due to the difficulty ofgetting favourable tenns oftrade for agricultural commodities and a corresponding requirement to focus efforts away from industrialising. Instead: 'The farmers' position is much more hopeful if development begins out­ side agriculture ... This in tum generates an increase in demand for agricultural products, and so development spreads from sector to sector'. (Lewis, 1958: 28). But just because Lewis believed development should begin outside agriculture does not preclude agricultural development, it simply would delay it until a growing market for increased agricultural production arose. By developing a non-agricultural sector there would be a concurrent rise in wages and demand for food (Johnson, 1982), thus creating an impetus for further stages of economic growth to occur in the domestic agricultural sector (Lewis, 1954). This illustrates Lewis's belief in balanced develop­ ment to avoid the loss of profits from the manufacturing sector through unfavourable tenns oftrade for imported foodstuffs (Lewis, 1955). Belat~dly, Lewis's prescriptions were not implemented correctly, particularly the premise for the increase in agricultural production for the domestic market. The concentration on 'industrialisation-by-invitation' was accompanied by a focus on agriculture for export, partly due to the entrenched plantocracy (Williams, 1970; Witter, 2004). The profits of the manufacturing sector were then squandered on imported products instead of being reinvested and development did not spread from sector to sector as Lewis had proposed (Demas, 1975). The results were disarticulated economies with a lack of local markets, low wages, and increasingly dependent on foreign capital, foreign markets, and foreign imports (de Janvry, 1981; A?'line, 1984). Radical Reprise: the Plantation School and the promotion of domestic agriculture The lacklustre results of the application of Lewis' theories were accentuated by high unemployment and lack ofimprovement for the majority ofthe populace. Itwas time for a populist response: 'Thirty years later, ifyou look at the evidence, all ofthis feverish activity in winning capital and entrepreneurship from abroad, appears now to have been an enduring futility'. (Best, 1976: 2). A growing cadre of Caribbean economists during the 1960s critically attacked Lewis' industrialisation-by-invitation model of development, which was blamed for growing foreign dependence that was antithetical with their struggle for greater economic autonomy (Girvan & Jefferson, 1971; Blackman, 1980; Bernal et al., 1984). Cultivated by such Caribbean economists as Lloyd Best, Norman Girvan, George Beckford, and Clive Y. Thomas, this group became known as the Plantation School due to their analysis of the plantation economy, dermed as situations where: 'the internal and external dimensions of the plantation system dominate the country's economic, social, and political structure and its relations with the rest o f the world'. (Beckford, 1972: 12). Deeply embedded in the plantation economy was the continued legacy of the colonial era whereby Caribbean islands remained subservient to foreign capitalist economies (Levitt & Best, 1975). The Plantation School pinned the continued foreign dependence of the region on Lewis and his influence on post-war industrialisation (Demas, 1975). The main criticism of Lewis, claimed the model, came from an alien historical context (classical theories of Western Europe) and, therefore, failed to see the structural obstacles imposed on the Caribbean that disallowed an internalising of economic growth and reinforced dependency on the metropole (Bernal et aI., 1984; Levitt & Best, 1975). The arrival of these Caribbean dependistas occurred during the era of independence for many of the islands of the Caribbean (Conway, 1998). The hope was that through independence the Caribbean could break dependence on the metropole by fighting foreign capital and control and concentrating on the structural problems of the domestic economy through resource allocation tow,ard domestic production. Creating more self-sufficient development would lead to balanced growth whereby: '[t]he process of capital accumulation becomes internally driven - that is, based on the national market with exports as an extension o f production for domestic use'. (Bernal et al., 1984: 72). For domestic agriculture this required breaking the plantation legacy of a perpetual reliance on imported foodstuffs for consumption, paid for by earnings from exports. In a principle reminiscent o f Lewis, Beckford claimed Without responsive food production the export earnings will just be frittered away on food imports, and whether the country is better or worse off will depend on the terms of trade between exports and food imports'. (Beckford, 1972: 189). The small fanner was important to achieving the goal of agricultural production for the domestic market as they were argued to be more productive than the plantations due to the utilisation of a larger percentage of their land in diversified production (Beckford, 1968; 1975; Williams, 1970; Marshall, 1985). Land redistribution from plantations to small farmers would increase production for the domestic market and lessen the dependence on volatile agricultural exports. Further, expanding the small farm sector would provide livelihood opportunities for the surplus labour which was not being drawn into the manufacturing sector as readily as Lewis had hoped (McDonald, 1980). In order for the small farming sector to deliver these benefits it would have to be provided with support services and initial protection from cheap imports as they built productive capacity. The Plantation School theorists proposed access to adequate land of good quality, the diffusion of technical knowledge, availability ofcapital for investment, subsidies, and tariff protection to achieve this support (Beckford, 1968; Bernal et al., 1984). For the first time theory was linked with policy in an attempt to increase agricultural development for the domestic market. Examples included the creation of the Caribbean Agricultural Research and Development Institute [CARDI] in 1975 to promote diffusion o f technical knowledge to small farmers through research and extension services, and the founding of the Caribbean Development Bank [CDB] in 1969 to provide capital for investment in agricultural development (Axline, 1984). The Plantation School's treatment of domestic agriculture had similarities with the 1897 British Royal West Indies Commission recommendation in supporting small farmers. Further, they shared Lewis' belief that agricultural production for the home market was necessary so that profits would not disappear through adverse terms of trade for imported foodstuffs, albeit they had different ideas on how this should be achieved. A poignant example was Jamaica's attempt at 'democratic socialism' under Michael Manley (Conway, 1998). Rising oil prices, decreased export revenue due to global recession, and soaring imported food prices in the mid-1970s stimulated the promotion of domestic agricultural programmes along the lines of the Plantation School's prescriptions, with a resultant increase in domestic food production (Manley, 1982; Weis, 2004; Witter, 2004). Unfortunately, while the oil crisis offered the opportunity to implement the Plantation School's theories, the experiment of promoting domestic agriculture was short-lived as external factors forced the transition from increased self-sufficiency to greater depend­ ence on the world market (Manley, 1982; Thomas, 1989; Weis, 2004). The oil crisis of the 1970s and subsequent global recession ofthe 1980s created severe fiscal crises for many states in the Caribbean, which opened the door for the imposition of a new economic policy which eroded the gains of the Plantation School's advancements (MandIe, 1982; Deere, 1990). Retrenchment and Retreat: Neoliberalism and the challenge to domestic agriculture Entering the 1980s Caribbean economies were faced with severe pressures resulting from high prices for oil and imported commodities, low prices for exports, stagnant or declin­ ing economic growth rates, and exploding national debt burdens (Harker, 1989). With several Latin American countries facing default on their debt, world financial institutions, primarily the International Monetary Fund [IMF], formulated policies to stabilise the global financial system through fiscal austerity. Termed Structural Adjustment Programmes [SAPs], conditions were placed on renegotiating debt and the approval of new loans which sought to reduce state expenditures and raise revenues to fulfil debt obli­ gations. These conditions commonly applied supply-side policies to raise revenues, such as controlling wages and devaluing the currency in order to lower the market price for exports. Theoreticallythiswouldraisedemandforexportsabroadandstimulatefurther production. To reduce state expenditures public services were cut and government staff­ ing reduced, fees for public services raised and taxes increased, and subsidies removed (Deere, 1990; Gayle, 1998; Klak, 1998). While efforts at fiscal austerity are indeed sensible, the timing and speed with which the IMF imposed these conditions on countries often had the opposite effect and created political crisis for governments as their citizens bore the brunt of rising costs, fewer public services, a decline in the productive capacity ofthe economy, and a resultant deterioration in the quality oflife for a vast majority ofthe population. The initial fiscal austerity measures had a negative effect on agricultural production for the domestic market as cuts in government spending gutted agricultural research, development, and extension services (Weis, 2004), effectively reversing the programmes created during the Plantation School era (Deep Ford & Rawlins, 2007). IMF policies, concerned about inflation, raised domestic interest rates to such a high degree, from 20- 40 percent, that neither businesses nor farmers were able to obtain capital for productive investment (Stiglitz, 2003). However, in what was termed the Washington Consensus and is now commonly referred to as neoliberalism, the IMF went beyond its stated mission of maintaining global economic stability through fiscal' austerity and included conditionalities promoting the ideology of laissez faire economics through privatisation and trade liberalisation. Claiming Caribbean economies were stifled by the inefficiencies of protectionism implemented during the era of the Plantation School's influence, the neoliberal agenda believed liberalised trade based dn comparative advantage would create competitively efficient economies and raise global wealth with trickle-down benefits for all (Stiglitz, 2003; Weis, 2004). Begun in the 1980s, and accelerated in the 1990s, publicly-owned enterprises were privatised and protectionist trade policies scaled-back in the indebted countries. The reduction of subsidies and trade barriers sought to create an environment whereby highly competitive producers excel while those less productive would be assim­ ilated into other competitive sectors of the economy. Domestic agriculture in the Caribbean proved to be at a disadvantage competitively when pitted against the industrialised agricultural sectors of North America and Europe - which were protected and supported by the very trade barriers and subsidies the neoliberal agenda derided. Any concerns about food security were answered with the availability of cheap and (assumed) stable imports, which stands in stark contrast to the theories ofboth Lewis and the Planta- I' tion School. The acceptance of this food security strategy has even contributed, to the decrease in the proportion of foreign assistance devoted to agricultural deveiopment; from 18 percent of assistance budgets in 1979 to 2.9 percent in 2006 (Walt, 2008). Critics have warned that relying on cheap imports is a short-term strategy whereby once agricultural subsidies in the North America and Europe are eased the cost of imported food would rise accordingly (Weis, 2004). In the meantime nations lose domestic producers, creating increased unemployment and a populace less able to afford any rise in costs. The recipient ofthe Nobel Prize in Economics, Joseph Stiglitz, pointed out this failure: 'Trade liberalization is supposed to enhance a country's income by forcing resources to move from less productive uses to more productive uses; as economists would say, utilizing comparative advantage. But moving re­ sources from low-productivity uses to zero productivity does not enrich a country, and this is what happened aU too often under IMF programmes'. (Stiglitz, 2003: 59, italics in original). In the Caribbean, cheap food imports have flooded domestic markets, damaging the increasingly unprotected and unsubsidised local agricultural sectors and biasing domestic tastes toward foreign goods while leaving the region vulnerable to the vagaries of the international market (Timms, 2006; Deep Ford & Rawlins, 2007; Weis, 2004; Iqbal, 1993). Just such a scenario victimised the Jamaican dairy industry when structural adjustment programmes in the I990s liberalised importation of subsidised powdered milk from the United States and Europe. Domestic milk production dropped from 38.8 million litres ofmilk in 1992 to 14 million litres in 2007, the lattelj representing only 10 percent ofthe milk consumed on the island (Myers Jr., 2008). I" Proponents of trade liberalisation acknowledged that while local dairy farmers suffered, 'poor children could get milk more cheaply' (Stiglitz, 2003: 5). Yet this qualification overlooks the fact that a decline in a country's productive capacity makes it more difficult for the poor to escape poverty. Further, the forewarnings of Weis (2004) became a reality when the European Union lowered export subsidies for milk which, in combination with the rise of demand in China and India, resulted in the price of an imported metric ton of powdered milk to increase from US$2,200 in 2006 to over US$5,000 in 2008 (Myers Jr., 2008). In response to the scarcity of milk on the shelves of supermarkets the Government of Jamaica has announced plans to import dairy cows and begin the rebuilding of the domestic dairy industry. For the Caribbean region the effects of neoliberalism have seen a growing agricultural trade deficit due to low prices for export commodities and an increasing food import bill (Table 1) (Thomas, 1993; Deep Ford & Rawlins, 2007; World Bank, 2008). The increasing reliance on imports and damaged productive capacity of the domestic agricultural sector make the region even more susceptible to volatility in global commodity markets. Further, trade liberalisation has resulted in a decline in tariff revenues, which have traditionally been a significant source of revenue for Caribbean governments (Khaira & Deep Ford, 2007; Witter, 2004). Critics of the macroeconomic 'one size fits all' approach of neoliberal structural adjustment programmes point out the lack of historical and local context in the focus on short-term balance of payment difficulties and trade liberalisation without due regard to the severe long-term negative impacts they have on balanced development (Klak, 1998; Stiglitz, 2003; Karagiannis, 2004; Weis, 2004; Conway & Timms, 2003). In addition, neoliberal policies have been asymmetrically applied whereby the industrialised countries of North America and Europe retain subsidies and trade barriers while developing countries are forced to dismantle their own in the name offiscal austerity and liberalised markets. This creates unfair trade that undermines the comparative advantage of farmers in the Caribbean on both the global and domestic levels (Conway & Timms, 2003). Further, it denies the fact that development in the industrialised countries began with protectionism and only opened up to free trade, albeit selectively and incompletely, once their industries were in an advantageous competitive position (Deep Ford & Rawlins, 2007; Stiglitz, 2003). Hence, the imposition of neoliberal policies has placed the horse in front of the cart, increasing the economic instability and vulnerability of Caribbean nations. The results of neoliberal policies for the Caribbean are reminiscent of the colonial era when the British adopted free trade and reinforced the negative aspects of the plantation economy. Even the unequal power relations between the colonial metropole and colony are perpetuated in the uneven terrain of 'fair trade' whereby agricultural sectors in the Caribbean are left without support financially, technically, or protectively, and opened up to compete with imported.

### Warming Turn

#### Industrial agriculture is the root cause of warming

Cummins 10(Ronnie, founder and Director of the Organic Consumers Association (OCA), a non-profit, U.S. based network of 850,000 consumers, dedicated to safeguarding organic standards and promoting a healthy, just, and sustainable system of agriculture and commerce. The OCA’s primary strategy is to work on national and global campaigns promoting health, justice, and sustainability that integrate public education, marketplace pressure, media work, litigation, and grassroots lobbying. Cummins is also editor of OCA’s website www.organicconsumers.org (30,000 visitors a day) and newsletters, Organic Bytes (270,000 subscribers), and Organic View, he has served as director of US and international efforts such as the Pure Food Campaign, and the Global Days of Action Against GMOs. From 1992-98 Cummins served as a campaign director for the Foundation on Economic Trends in Washington, D.C, October 10th, 2010, “Industrial Agriculture and Human Survival: The Road Beyond 10/10/10”, <http://www.commondreams.org/view/2010/10/07-9>)

Industrial Food and Farming: A Deadly Root of Global Warming Although transportation, industry, and energy producers are obviously major fossil fuel users and greenhouse gas polluters, not enough people understand that the worst U.S. and global greenhouse gas emitter is “Food Incorporated,” transnational industrial food and farming, of which Monsanto and GMOs constitute a major part. Industrial farming, including 173 million acres of GE soybeans, corn, cotton, canola, and sugar beets, accounts for at least 35% of U.S. greenhouse gas emissions (EPA’s ridiculously low estimates range from 7% to 12%, while some climate scientists feel the figure could be as high as 50% or more). Industrial agriculture, biofuels, and non-sustainable cattle grazing - including cutting down the last remaining tropical rainforests in Latin America and Asia for GMO and chemical-intensive animal feed and biofuels - are also the main driving forces in global deforestation and wetlands destruction, which generate an additional 20% of all climate destabilizing GHGs. In other words the direct (food, fiber, and biofuels production, food processing, food distribution) and indirect damage (deforestation and destruction of wetlands) of industrial agriculture, GMOs, and the food industry are the major cause of global warming. Unless we take down Monsanto and Food Inc. and make the Great Transition to a relocalized system of organic food and farming, we and our children are doomed to reside in Climate Hell. Overall 78% of climate destabilizing greenhouse gases come from CO2, while the remainder come from methane, nitrous oxide, and black carbon or soot. To stabilize the climate we will need to drastically reduce all of these greenhouse gas emissions, not just CO2, and sequester twice as much carbon matter in the soil (through organic farming and ranching, and forest and wetlands restoration) as we are doing presently. Currently GMO and industrial/factory farms (energy and chemical-intensive) farms emit at least 25% of the carbon dioxide (mostly from tractors, trucks, combines, transportation, cooling, freezing, and heating); 40% of the methane (mostly from massive herds of animals belching and farting, and manure ponds); and 96% of nitrous oxide (mostly from synthetic fertilizer manufacture and use, the millions of tons of animal manure from factory-farmed cattle herds, pig and poultry flocks, and millions of tons of sewage sludge spread on farms). Black carbon or soot comes primarily from older diesel engines, slash and burn agriculture, and wood cook stoves. Per ton, methane is 21 times more damaging, and nitrous oxide 310 times more damaging,as a greenhouse gas than carbon dioxide, when measured over a one hundred year period. Damage is even worse if you look at the impact on global warming over the next crucial 20-year period. Many climate scientists admit that they have previously drastically underestimated the dangers of the non-CO2 GHGs, including methane, soot, and nitrous oxide, which are responsible for at least 22% of global warming. Almost all U.S. food and farm-derived methane comes from factory farms, huge herds of confined cows, hogs, and poultry operations, in turn made possible by heavily subsidized ($15 billion per year) GMO soybeans, corn, cottonseed, and canola; as well as rotting food waste thrown into landfills instead of being separated out of the solid waste stream and properly composted. To drastically reduce C02, methane, and nitrous oxide releases we need an immediate consumer boycott, followed by a government ban on factory farms, dairies, and feedlots. To reduce black carbon or soot emissions we will need to upgrade old diesel engines, and provide farmers and rural villagers in the developing world with alternatives to slash and burn agriculture (compost, compost tea, biochar) and non-polluting cook stoves and home heating. We also need to implement mandatory separation and recycling of food wastes and “green garbage” (yard waste, tree branches, etc.) at the municipal level, so that that we can reduce methane emissions from landfills. Mandatory composting will also enable us to produce large quantities of high quality organic compost to replace the billions of pounds of chemical fertilizer and sewage sludge, which are releasing GHGs, destroying soil fertility, polluting our waters, and undermining public health. Nearly all nitrous oxide pollution comes from dumping billions of pounds of synthetic nitrogen fertilizer and sewage sludge on farmland (chemical fertilizers and sludge are banned on organic farms and ranches), mainly to grow GMO crops and animal feed. Since about 80% of U.S. agriculture is devoted to producing non-organic, non-grass fed meat, dairy, and animal products, reducing agriculture GHGs means eliminating the overproduction and over-consumption of GMO crops, factory-farmed meat, and animal products. It also means creating massive consumer demand for organic foods, including pasture-raised, grass-fed animal products. The fact that climate change is now metastasizing into climate chaos is indisputable: massive flooding in Pakistan, unprecedented forest fires in Russia and the Amazon, melting of the glaciers that supply water for crops and drinking water of a billion people in Asia and South America, crop failures in regions all over the globe, record heat waves in the U.S. and Europe, methane leaking from the Arctic tundra and coastlines, killer hurricanes in the Gulf of Mexico and Central America, and steadily spreading pestilence, crop failures, and disease. The realization that every time we eat non-organic processed food, we are ingesting unlabeled, hazardous GMO foods and pesticides is indeed alarming. But the impending threat of industrial food and farming detonating runaway climate change (i.e. moving from our current .8 degree Centigrade average global rise in temperature to 2-6 degrees) is terrifying. Either we rein in industrial food and farming and GMOs, out-of-control politicians and corporations, and make the transition to an organic and green economy or we will perish.

#### Warming causes structural violence and inequality

Cuomo ‘11 (Chris Professor of Philosophy and Women's Studies, and an affiliate faculty member of the Environmental Ethics Certificate Program and the Institute for African-American Studies. The author and editor of many articles and several books in feminist, postcolonial, and environmental philosophy, Cuomo served as Director of the Institute for Women's Studies from 2006-2009. Climate Change, Vulnerability, and Responsibility,‚Äù Hypatia 26 no4 Fall 2011 p. 690-714, AM)

The aftermath of Hurricane Katrina made it plain that structural inequalities produced by racism can determine who is most affected by severe weather events, and in turn disasters can greatly intensify social and political inequalities. In addition, within nearly any society the poorest and most vulnerable includes disproportionate numbers of females, people of color, and children. Research shows that large-scale disasters are especially devastating for those who lack economic and decision-making power, and that ‚Äúeconomic insecurity is a key factor increasing the impact of disasters on women as caregivers, producers, and community actors‚Äù (Enarson 2000, viii). But economic security is not the only factor influencing female vulnerabilities. Existing social roles and divisions of labor can also set the stage for increased susceptibility to harm. The tsunami that struck Asia in late 2004 resulted in a much greater loss of life among women and girls in many locations, because women ‚Äústayed behind to look for their children and other relatives; men more often than women can swim; men more often than women can climb trees,‚Äù and at the time the waves struck, many men and boys were working in small boats or doing errands away from home (Oxfam 2005; see also American Congress of Obstetricians and Gynecologists 2006). Extreme droughts, already occurring due to climate change, exacerbate gender inequalities in places where it is women’s and girls’ responsibility to gather daily water, for when water becomes more scarce, ‚Äúmany poor people, but particularly women and girls, will have to spend more time and energy fetching water from further away‚Äù (Stern 2009, 70). Physical hardship for women and girls is multiplied, but there are also auxiliary effects, such as decreased opportunities for girls to attend school and increased risk of assault (American Congress of Obstetricians and Gynecologists 2006; Stern 2009; UN News Centre 2009). And wealthier high emitters with running water are not immune to such ecological pressures. In southeast Australia previously prosperous farmers are suffering due to reduced water availability and accompanying distribution policies. Women married to men in farming families report that their burden is greatly increased, because drought reduces farm income, and when wages are needed women find more opportunities for off-farm work. Some must travel far or temporarily relocate for employment, although their caretaking responsibilities remain. Male partners respond to the compounding impacts of loss of financial security, livelihood, and identity with increased incidences of depression and domestic violence (Alston 2008). Not surprisingly, their vulnerabilities are also shaped by norms of sex and gender.

## Consumption K

### A2 Consumption Top

#### The aff is about agriculture, so the thesis of the K goes away – food is a necessity, not a first-world luxury.

#### Turn – aff is already oriented against present consumption practices by advocated lower-yield farming that is local and sustainable.

## Dualism K

### A2 Dualism

#### Turn: Sustainable ag restores farmers’ relationships with land

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

GROWING FOOD ONCE EXPRESSED a “personal” relationship between human beings, wildlife and the earth. Successful farming was based on generations of accumulated knowledge about place: climate, land, water, soil and the organisms within it; mixing and rotating crops, seed saving, breeding, and recy- cling organic matter. Growing food was an intimate process; it involved farmer, land, and community, with the goal of sustaining that life-giving exchange in perpetuity. At the heart of the matter: a deep love of the land.

#### Industrial ag exacerbates dualism

# T/Theory Block

## Extra-T

### A2 Ag isn’t just EP

#### Their interp means the only topical affs are ones that ONLY protect the environment – means the only topical advantage is biodiversity which kills productive deabate about a variety of subjects

#### Instead the aff should be topical like this – the plan must be a restriction on resource extraction that preserves resources – but it can have other effects due to these restrictions. Solves explosion of ground.

### A2 Research is Extra-T

#### Research is directly topical

Scialabba 2000 [(Nadia, Food and Agriculture Organization of the United Nations) “FACTORS INFLUENCING ORGANIC AGRICULTURE POLICIES WITH A FOCUS ON DEVELOPING COUNTRIES” IFOAM 2000 Scientific Conference, Basel, Switzerland, 28-31 August 2000] AT

Prospects. It is evident that environmental conservation will remain second to livelihood needs in developing countries. Natural resources, however, are the basis for agricultural productivity. Organic agriculture has positive “side-effects” on the environment. Reconciling natural resource conservation and agricultural production through organic agriculture is, therefore, an avenue for supportive policies in developing countries. These policies should focus on facilitating research and education on agro-ecosystem management. Cooperation between environment and agricultural agencies on land use and standard setting is essential.

## A2 Must Eliminate Extraction

### CI

#### Counter-interp – prioritize means “To arrange or deal with in order of importance.” This means the aff must regulate resource extraction for the purpose of environmental protection, but does not have to eliminate resource extraction

Woodhouse 13 [(Allie, camp counselor and ex-debater) “Topic Analysis by Scott Phillips” Victory Topic Analysis: Jan-Feb 2014] AT

Prioritize/ when the two are in conflict: Merriam Webster 70 defines “prioritize” as, “to organize (things) so that the most important thing is done or dealt with first.” This and the phrase “when the two are in conflict” seems to definitively indicate that the burdens should force a comparative debate over resource extraction and environmental protection when they conflict, rather than a complete endorsement of one and a complete rejection of the other. This means that, for instance, the affirmative does not have to prove that resource extraction is intrinsically wrong in all cases, but rather that we ought to prioritize environmental protection over resource extraction when the two conflict.

#### Key to real world education and literature – no one in the lit absolutely prioritizes one since the other is obviously valuable to some extend, and real-world governments recognize at least some obligation to both, so it’s more accurate to debate about prioritizing them. Key to fairness since the lit forms the basis of the arguments we can make and education since that frames what arguments are worth debating.

#### Also it’s the only logical definition of “prioritize”

### A2 Ground

#### Turn – your interp is worse since a complete ban of some resource is not real-world and screws the aff every time. Best-case scenario, it incentivizes affs to keep breaking new and never have in-depth debates since all the lit advocates reforming or replacing the process.

#### Impact turn – aff is at an empirical disadvantage, so neg losing some ground is fine.

#### No link – all generic K’s and NC’s still apply to the aff.

#### This begs the question of why you deserve that ground in the first place – even if the topic is unfair, that’s what sets the limits of ground.

## Both RE and EP I Meets/Must Conflict

### Top

#### Ag is a form of resource extraction that conflicts with environmental protection when it’s done unsustainably – prefer evidence from an expert writing for a debate context

Shapiro [(Alan, Earth and Environmental Engineering Graduate Student, Columbia University; Ashley Schneider, Student at Northern Alberta Institute of Technology) “The Question of Environmental Accountability for Resource Extraction” Topic paper for HS Model UN, Univ of alberta] AT

Resource extraction causes both environmental degradation and environmental pollution. Industries are responsible for approximately 39% of the greenhouse gases emitted. Extraction of non-renewable resources such as fossil fuels and minerals poses a large problem, with crude oil and natural gas exploration contributing to 60% of the total environmental impact. Biotic resource extraction including agriculture, wood harvesting, animal grazing, and to a smaller extent, hunting and biotic harvesting for pharmaceutical reasons have also had effects on the environment. Fish capture is the major aquatic resource extraction by humans resulting in over 93 million tons of fish being produced in 2005, with the majorities of extraction taking place in the ocean (FAO 2009). While biotic resource harvesting done at sustainable levels does not necessarily cause harm, over extraction can cause deforestation and soil erosion from over wood harvesting, soil nutrient depletion from agriculture and the collapse of fish stock from over fishing in certain areas. However the extraction itself may not be the biggest cause of environmental impact. Agriculture, while the harvesting itself may not cause a huge impact, uses 70% of global fresh water consumption (Hoekstra and Chapagain 2008; Koehler 2009) and according to the FAO database, also uses approximately 38% of the world‟s total land area. Toxic emissions are also a problem. Most toxic substances released from human actions are from the electrical, pulp, utilities, metal, and mining industries. This also has an adverse effect on the environment and the ecosystems in the immediate areas of these industries. There are two major points to address on this topic. The first is: “How can we balance environmental damage from different industries”? Should all industries be accountable to the same standard? Or should more vital industries be allowed higher „damage quotas‟? And if the latter is true, how do we assess the „necessity‟ of a particular industry? It is clear that different industries serve different roles in society, but it is still difficult to create an unbiased hierarchy while pleasing the majority of the parties involved. The second point is: “Should different nations have different allowances based on their development status”? It could be argued that developed nations have already exploited their rights and privileges, and it is unfair punishment for developing nations if they are not given the same opportunity. At the same time, this allows some „developing‟ countries like India and China, who lead the world in extraction and export of many resources, to continue to damage the environment without consequence. The better way perhaps is to monitor environmental damage from nation to nation and vary consequences accordingly, however this is difficult due to a lack of networks and standards in place at present. Either way, researching and developing more environmentally friendly methods of resource extraction and more efficient reclamation techniques are vital components of any solution.

#### Thus the aff shifts from an extraction-focused industrial model of agriculture to an environment-focused sustainable model, directly meeting the conflict of the topic

Wilson 9 [(Adam, Human Resources Management) “Social and Ecological Implications of Sustainable Agriculture” The 9th International Students Summit on Food, Agriculture and Environment in the New Century] AT

Globalization and the industrialization of agriculture over the past half-century have changed the composition and nutritional value of food cultures around the world. Rather than seeking out new technologies in the form of genetically modified organisms to increase our food security we, as a global community, might assess our attitudes and relationships with ourselves, each other and nature, adjusting our behavior to lead more sustainable lifestyles. Community supported agriculture and sustainable agriculture are exemplary methods of how this can be accomplished. This paper will explore the different methods of sustainable, community supported agriculture that are currently being employed worldwide and how they can be put into practice at larger scales in order to mitigate human impact on the environment while providing necessary sustenance and basic human interactions. Artisanal forms of harvesting food are being abandoned in favor of corporately owned and operated methods of resource extraction that seek to maximize profit and yield at the expense of the environment. As a result consumers have become increasingly disconnected from the farmers, ranchers, and fishers who produce the food they eat. These changes however have given rise to global initiatives, such as the slow foods movement and community supported agriculture, which aim to increase the utilization of sustainable agricultural techniques and the reinstatement of local food systems. Small and large-scale implementation of sustainable, community-based agriculture is being conducted throughout the globe; from Cuba to Africa to East Lansing. Through the use of case studies and empirical evidence this paper will investigate how a shift from the current global-industrial model of agriculture to a locally-based sustainable model can increase food security and assist in alleviating pressures associated with environmental degradation and energy consumption. Sustainable agriculture, when applied in the context of local food systems, may diminish the amounts of environmental pollutants emitted without compromising the ability to produce suitable amounts of food. Furthermore, regionally grown and consumed foods are less susceptible to economic and climate variations than their industrial counterparts due to the decreased dependence on long-distance delivery systems. These types of systems also have the potential to bring communities closer and stimulate regional economies while preserving traditional food cultures.

### Cuba Example

#### Empirics – shifting from industrial to organic agriculture is an instance of shifting from a focus on resource extraction to environmental protection. This card is incredibly specific

Monzote 10 [(Fernando Funes, researcher at the Experimental Station Indio Hatuey, University of Matanzas, Cuba, founding member of the Cuban Association of Organic Agriculture) “Towards sustainable agriculture in Cuba” Ch10 of The Conversion to Sustainable Agriculture: Principles, Processes, and Practices] AT

Cuba has a long agricultural tradition as an exporter of crops produced under conditions of monoculture and natural resource extraction (Le Riverend, 1970; Moreno Fraginals, 1978; Marrero, 1974-1984). Practiced over approximately four centuries, these agricultural patterns have caused an enormous negative environmental impact on soils, biodiversity, and forest cover (Funes-Monzote, 2004). However, during the last decade agricultural development has been reoriented (Rosset and Benjamin, 1994; Funes et al., 2002; Wright, 2005). Undoubtedly, today agricultural production in Cuba is more self-sufficient and concerned, as never before, with environmental protection. In 1994, the National Programme for Environment and Development (The Cuban adoption of the Agenda 21) was designed, and two years later the National Environmental Strategy approved (CITMA, 1997; Urquiza and Gutiérrez, 2003). In 1997 "The Cuban Law of Environment", become the environmental protection policy of the State (Gaceta Oficial, 1997). Although environmental protection is still low in practice, legal support for preserving environment is very useful for present and future agriculture sustainable strategies. A principal goal of the Cuban revolution of 1959 was to resolve the long-standing problems of agriculture. One of the primary measures taken by the revolutionary government was the First Agrarian Reform Law, which eliminated both national and foreign (basically North American) ownership of large farms, called latifundios, and turned over the land to peasants (campesinos) to work. Additionally, it promoted agricultural diversification (Anon, 1960; Valdés, 2003). This action generated great conflict with both the old latifundio interests and the United States government. In 1963 a much more radical Second Agrarian Reform Law decreased the maximum landholding limit to 67 ha for individuals. As a consequence of these laws, the rapid industrialization of agriculture based on conventional methods again tended to concentrate land in large state enterprises, and consequently resulted in similar environmental problems as the old latifundios. Although on one hand, this model successfully increased both levels of production and rural well-being owing to the social goals of the political system, on the other hand it produced negative economic, ecological and social consequences that cannot be ignored. 2 The excessive application of externally-produced agrochemical inputs (i.e. produced outside the country), the implementing of monocultural, large-scale production systems, the concentration of farmers in the cities or rural towns and the dependence on few exports, conferred a high vulnerability to the nationally established conventional agricultural model. This was strongly noted at the beginning of the 1990s with the disintegration of the socialist Eastern Europe and the USSR, when the majority of the favorably-priced inputs, both material and financial, disappeared. Cuban agriculture, along with the other branches of the national economy, entered into its greatest crisis in recent history, but at the same time, these factors provided exceptional conditions for the construction of an alternative agricultural model at a national scale. The transformation that occurred in the Cuban countryside during the last decade of the 20th century is an example of agricultural conversion at a national scale --from a highly-specialized, conventional industrialized agriculture, dependent on external inputs-- to an alternative model based on some of the principles of agroecology and organic agriculture (Altieri, 1993; Rosset and Benjamin, 1994; Funes et al., 2002). Numerous studies of this conversion attribute its successful advances both to the form of social organization and the development of environmentally sound technologies (Rosset and Benjamin, 1994; Deere, 1997; Pérez Rojas et al., 1999; Sinclair and Thompson, 2001; Funes et al., 2002; Wright, 2005). Different from sustainable agriculture movements developed in isolated fashion in most countries, Cuba developed a massive movement with wide, popular participation, where agrarian production was seen as key to food security for the population. At this early stage, the agricultural systems most commonly employed consisted of the substitution of biological inputs for chemical, and the more efficient use of local resources, by which numerous objectives of agricultural sustainability were serendipitously also reached. Nevertheless, the author believes it is necessary to develop a more integrated, long term agroecological focus and to more strongly combine the economic, ecological and social dimensions. On one hand, the persistent shortage of external inputs and, for other, the diverse production systems in the Cuban agriculture, has favored the proliferation of agroecological practices through the country. In the present scenario (with about 5 000 enterprises and cooperatives and nearly 400 000 individual producers) neither the conventional pattern nor that of input substitution will be versatile enough to cover the technological demands of such a heterogeneous and diverse agriculture (Granma, 2006a). Cuba has already accumulated significant experiences in the transition towards a more sustainable agriculture. However, this effort could be thwarted by changing economic conditions if sustainable agriculture is viewed as a temporary solution to overcome the consequences of the crisis. It will only continue if is perceived as a vital necessity for the future of the country. This chapter will present the context of Cuban agriculture, pointing out relevant elements of the national level experiment towards sustainable agriculture which has been taking place during the 1990s. A mixed farming systems approach is presented here as the next step toward an agroecological model at national scale.

### Short I Meet

#### The aff is an example of prioritizing environment protections over production

Borisova et al 9 [(Tatiana Borisova, assistant professor, Food and Resource Economics Department, UF/IFAS Extension, Gainesville, FL; Laila Racevskis, assistant professor, Food and Resource Economics Department, UF/IFAS Extension, Gainesville, FL; Bryan Fluech, sea grant extension agent, Collier County, Naples, FL; and Jane Provancha, environmental projects manager for innovative health applications, Kennedy Space Center, Cape Canaveral) “Balancing Agricultural Production and Environmental Protection in the Tri-County Agricultural Area: Results from Stakeholder Discussions” publication of the Food and Resource Economics Department, December] AT

Strategies to Balance Agriculture and Environmental Protection in the Region The stakeholders who met during the FNRLI session offered the following suggestions to balance agricultural production and environmental protection in the region. Diversification of agricultural production and the ability to capture new markets were discussed to increase the profitability of agricultural enterprises. Production of value-added products was proposed as an example. Production of value-added products can imply that farmers bypass some of the supply chain organizations by processing their own products or directly marketing their products to consumers. Value-added products can also involve offering products or services that have never been offered in the supply chain, such as new crop varieties or agrotourism programs (wherein visitors pay to enjoy scenic agricultural areas). For more information about value-added agricultural productions, see EDIS document FE639 (Evans 2006). Local food marketing, community supported agriculture (CSA), and organic production were proposed to make agriculture more sustainable while ensuring sufficient revenues to agricultural producers. In turn, the problem of increasing farming production costs (often linked by farmers to more stringent environmental regulation) can be addressed through developing new production methods and increasing the effectiveness of agricultural operations. Some stakeholders argued for more collaboration between agricultural producers and environmental/nongovernmental organizations. Despite differences in opinions on many subjects, environmental/nongovernmental organizations and agricultural producers in the TCAA region have more interests and priorities in common with each other than with urban stakeholders. Urban development in the region is perceived to impact the interests of both agricultural and environmental groups (by driving the land prices up and by negatively affecting the environment). Similarity of interests of agricultural and environmental/nongovernmental stakeholder groups should be emphasized.

## T – EP

### I meets

#### Goal of organic ag is environmental benefits

Horrigan et al 2 [(Leo Horrigan, Robert S. Lawrence, and Polly Walker)“How Sustainable Agriculture Can Address the Environmental and Human Health Harms of Industrial Agriculture” Center for a Livable Future, Johns Hopkins Bloomberg School of Public Health Environmental Health Perspectives • VOLUME 110 | NUMBER 5 | May 2002] AT

Unsustainability in agriculture is not a new issue. Large civilizations have risen on the strength of their agriculture and subse- quently collapsed because their farming methods had eroded the natural resource base (106). Today’s conventional or industrial agriculture is considered unsustainable because it is similarly eroding natural resources faster than the environment can regenerate them and because it depends heavily on resources that are nonrenewable (e.g., fossil fuels and fossil aquifers). One of the goals of the sustainable agricul- ture movement is to create farming systems that mitigate or eliminate environmental harms associated with industrial agriculture. Sustainable agriculture is part of a larger move- ment toward sustainable development, which recognizes that natural resources are finite, acknowledges limits on economic growth, and encourages equity in resource allocation. Sustainable agriculture gives due consider- ation to long-term interests (e.g., preserving topsoil, biodiversity, and rural communities) rather than only short-term interests such as profit. Sustainable agriculture is also place specific.

#### More evidence.

Ikerd 96 [(John, Professor Emeritus of Agricultural & Applied Economics University of Missouri Columbia) “SUSTAINABLE AGRICULTURE: A POSITIVE ALTERNATIVE TO INDUSTRIAL AGRICULTURE” Presented at the Heartland Roundup, a conference sponsored by the Heartland Network, December 7, 1996] AT

The paradigm of sustainable agriculture has emerged to solve problems created by the industrial model, primarily pollution of our environment and degradation of our natural resource base. However, this new paradigm seems capable of creating benefits the industrial model is inherently incapable of creating, such as greater individual creativity, dignity of work, and attention to issues of social equity.

#### Goal of organic agriculture is environmental protection.

**NOSB** [(United States Department of Agriculture National Organic Standards Board, advisory board that makes recommendations to the [United States Secretary of Agriculture](http://en.wikipedia.org/wiki/United_States_Secretary_of_Agriculture) on [organic food](http://en.wikipedia.org/wiki/Organic_food) and products. Members are appointed by the Secretary) “Organic Production/Organic Food: Information Access Tools”, 2007] DD

**Organic agriculture is an ecological** production **management system that** promotes and **enhances biodiversity, biological cycles and** soil **biological activity. It is based on minimal use** of off-farm inputs and on management **practices that restore, maintain and enhance ecological harmony.**

### CI – T EP

#### Environmental protection refers to protection of the environment and changes to the management and use of natural resources.

Porras 95 [Porras, Ileana M (Associate Professor, University of Utah College of Law.). "Puzzling Relationship between Trade and Environment: NAFTA, Competitiveness, and the Pursuit of Environmental Welfare Objectives, The." Ind. J. Global Legal Stud. 3 (1995): 65] AJ

The concept "environmental protection" encompasses a bewildering array of often contested environmental welfare objectives and the piecemeal governmental regulation of domestic economic and noneconomic human activities that are thought to contribute to a given environmental problem. "Environmental protection" refers to inter alia: the protection, conservation and restoration of natural habitats and species; the protection of human health and safety through the provision of safe water and clean air; the reduction or elimination of toxic and other hazardous substances from the human environment (including the workplace); the safe handling and disposal of harmful substances; the rational exploitation, use, and management of renewable and nonrenewable natural resources including ores, minerals and oil, but also fish, wildlife, water and trees; and the protection or preservation of unique landscapes and habitats, through their designation as national parks or other protected status.

#### Prefer

#### In the context of international agreements like NAFTA, so it accounts for multiple countries’ views

#### The definition of EP is intended to be inclusive – it encompasses the lit that more narrow definitions refer to, so it coopts their reasons to prefer

#### Production kills environment

Horrigan et al 2 [(Leo Horrigan, Robert S. Lawrence, and Polly Walker)“How Sustainable Agriculture Can Address the Environmental and Human Health Harms of Industrial Agriculture” Center for a Livable Future, Johns Hopkins Bloomberg School of Public Health Environmental Health Perspectives • VOLUME 110 | NUMBER 5 | May 2002] AT

The Union of Concerned Scientists (1) said that industrial agriculture views the farm as a factory with “inputs” (such as pesticides, feed, fertilizer, and fuel) and “outputs” (corn, chickens, and so forth). The goal is to increase yield (such as bushels per acre) and decrease costs of production, usually by exploit- ing economies of scale. Industrial agriculture depends on expen- sive inputs from off the farm (e.g., pesticides and fertilizer), many of which generate wastes that harm the environment; it uses large quantities of nonrenewable fossil fuels; and it tends toward concentration of production, driving out small producers and undermining rural communities. The following environmental and public health concerns are associated with the prevailing production methods: • Monocultures are eroding biodiversity among both plants and animals. • Synthetic chemical pesticides and fertilizers are polluting soil, water, and air, harming both the environment and human health. • Soil is eroding much faster than it can be replenished—taking with it the land’s fer- tility and nutrients that nourish both plants and those who eat them. • Water is consumed at unsustainable rates in many agricultural areas.

#### Ag exploits resources and conflicts with the environment

Sekitoleko 93 [(Victoria, Ministry of Agriculture, Animal Industry and Fisheries, Uganda) “Resolution of Conflicts Between Agriculture and Environment Protection in Uganda” Nordic Journal of African Studies 2(2): 103–108 (1993)] AT

Agriculture as the science and art of raising crops and animals for the benefit of man is as old as civilization itself. For many years, the relationship between agricultural practices and environment remained stable and favourable. However, this relationship got disturbed or upset when, due to certain forces, agricultural exploitation of natural resources led to serious environmental degradation. The timing and magnitude of the problem when it occurred has varied from country to country. However, what is certain now is that there is an environmental crisis in every country of the world. Uganda is no exception.

## T – Resource Extraction

### Counter-interp

#### Ag is resource extraction

Lichtenberg 2000 [(Erik, professor in the Department of Agricultural and Resource Economics at the University of Maryland) “Agriculture and the Environment” Working Paper No 00-15 Sept 2000] AT

Farming is, at bottom, a resource extraction industry. Both crop and livestock production involve harvesting biota, that is, renewable natural resources produced by biological processes. Both utilize as intermediate inputs a variety of natural resources, such as soils, water, genetic material, non-crop plant life, and naturally occurring fauna that mitigate damage caused by pest species. These natural resources may simultaneously inﬂuence environmental spillovers from agricultural production like water pollution, pesticide poisonings, or scenic amenities

### ---Long Specificity Standard

#### 1. Specificity

#### A) Legal definition proves

Natural Resource Extraction Ordinance [“Town of Monson Natural Resource Extraction Ordinance” City of Monson] AT

Natural Resource Extraction Not Requiring a Permit The following natural resource extraction activities and uses do not require a Land Use Permit: 1. Resource extraction associated with agricultural activities for use on farmlands, agricultural or on silvicultural lands for such purposes in the immediate vicinity of an extraction point for such activities and use;

#### B) accuracy – It identifies a distinct term of art “biotic resource extraction” as a subset of the resolutional conflict, which means their generics are not about the right lit base

#### C) This best applies to DCs – Hunting is the primary form of resource extraction there so they destroy the only possible aff in these countries

Traun 09 [Max Abensperg-Traun. Federal Ministry of Agriculture, Forestry, Environment and Water Management, Division for Nature Conservation and Species Protection, CITES Management Authority, Austria. “CITES, sustainable use of wild species and incentive-driven conservation in developing countries, with an emphasis on southern Africa.” Biological Conservation. 142 (2009) 948–963]

In the developing nations, use of wild-living natural resources by rural communities is rarely a choice but an economic imperative. Further, use can either be extractive or non-extractive. Extractive use may be lethal (e.g. through trophy hunting, logging, etc.) or through the collection of parts and derivatives without affecting the survival of the specimens involved (e.g. plant products). Non-extractive use refers to all varieties of nature-based tourism. Given the economic circumstances for affected rural communities, a dis- tinction between whether use of species is primarily subsistence or for primarily commercial purposes is largely inseparable and this paper

#### Specific definitions are key – 1. topic prep is done by researching the terms and issues in the resolution, so a definition that applies well to the resolution is the only way to yield prep

#### 2. The fact that they apply well to the resolution means they’re more predictable since they’re the definition more likely to come up in a search of the definitions in the context of the resolution

#### 3. Contextual definitions are more accurate since they define the words as they apply to the topic which evaluates what the topic actually means – this is key to jurisdiction which is an independent impact – the judge is bound to vote for the person who debated the topic better so an accurate definition is the best for jurisdiction

### ---Outweighs limits

#### The size of the topic is irrelevant since the size of plans and negatives trades off with the size of the topic, so even if the topic is overly broad it just means people will read larger or more disads

#### Topic prep is a pre-requisite to limits – a small topic is useless if we don’t have the ability to prep the topic in the first place. Neither interpretation completely destroys limits since it’s still bounded by my counter-interp, but their interp completely destroys specific prep

#### Being able to find specific evidence solves an overly broad topic since it means finding prep is much easier and quicker, so even if the topic is larger negs will be able to prepare better against specific plans and advantages, and if the aff argues about the whole resolution limits are irrelevant since everything you read links

### More Legal Context

#### More legal context

Natural Resource Extraction Ordinance [“Town of Monson Natural Resource Extraction Ordinance” City of Monson] AT

This Ordinance shall be known and cited as the “Natural Resource Extraction Ordinance” of the Town of Monson, Maine. Section II: Purpose A. To protect the short-term and long-term quality and quantity of natural resources within the Town of Monson; B. To ensure that any proposed large-scale resource extraction activity is subject to appropriate review and approval by the Town of Monson and the State of Maine; C. To establish a regulatory framework for the oversight and management of natural resources, and to develop management practices governing the extraction of natural resources to ensure ongoing sustainability and quality and avoid interruption of supply or degradation in the quality of natural resources within the Town of Monson; D. To protect the general health, safety and welfare and well-being of all persons dependent on natural resources located in the Town of Monson; E. To ensure that natural resource extraction does not adversely impact or impair plant, wildlife, wetlands, meadows, and forested areas dependent on natural resources; F. To ensure the ongoing stability and to safeguard the environmental health of surface land in the conservation of topsoil and agricultural activities dependent on natural resources;

### Renewables---I/M

#### I meet – the aff is topical because of soil erosion.

#### First, agriculture unsustainably uses soil now, hurting the environment – the plan shifts from this

Shapiro [(Alan, Earth and Environmental Engineering Graduate Student, Columbia University; Ashley Schneider, Student at Northern Alberta Institute of Technology) “The Question of Environmental Accountability for Resource Extraction” Topic paper for HS Model UN, Univ of alberta] AT

Resource extraction causes both environmental degradation and environmental pollution. Industries are responsible for approximately 39% of the greenhouse gases emitted. Extraction of non-renewable resources such as fossil fuels and minerals poses a large problem, with crude oil and natural gas exploration contributing to 60% of the total environmental impact. Biotic resource extraction including agriculture, wood harvesting, animal grazing, and to a smaller extent, hunting and biotic harvesting for pharmaceutical reasons have also had effects on the environment. Fish capture is the major aquatic resource extraction by humans resulting in over 93 million tons of fish being produced in 2005, with the majorities of extraction taking place in the ocean (FAO 2009). While biotic resource harvesting done at sustainable levels does not necessarily cause harm, over extraction can cause deforestation and soil erosion from over wood harvesting, soil nutrient depletion from agriculture and the collapse of fish stock from over fishing in certain areas. However the extraction itself may not be the biggest cause of environmental impact. Agriculture, while the harvesting itself may not cause a huge impact, uses 70% of global fresh water consumption (Hoekstra and Chapagain 2008; Koehler 2009) and according to the FAO database, also uses approximately 38% of the world‟s total land area. Toxic emissions are also a problem. Most toxic substances released from human actions are from the electrical, pulp, utilities, metal, and mining industries. This also has an adverse effect on the environment and the ecosystems in the immediate areas of these industries. There are two major points to address on this topic. The first is: “How can we balance environmental damage from different industries”? Should all industries be accountable to the same standard? Or should more vital industries be allowed higher „damage quotas‟? And if the latter is true, how do we assess the „necessity‟ of a particular industry? It is clear that different industries serve different roles in society, but it is still difficult to create an unbiased hierarchy while pleasing the majority of the parties involved. The second point is: “Should different nations have different allowances based on their development status”? It could be argued that developed nations have already exploited their rights and privileges, and it is unfair punishment for developing nations if they are not given the same opportunity. At the same time, this allows some „developing‟ countries like India and China, who lead the world in extraction and export of many resources, to continue to damage the environment without consequence. The better way perhaps is to monitor environmental damage from nation to nation and vary consequences accordingly, however this is difficult due to a lack of networks and standards in place at present. Either way, researching and developing more environmentally friendly methods of resource extraction and more efficient reclamation techniques are vital components of any solution.

#### Next, soil is a non-renewable resource

O’geen 6 [(ANTHONY TOBY O’GEEN, UC Cooperative Extension Assistant Soil Resource Specialist, Department of Land, Air, and Water Resources, UC Davis; and LAWRENCE J. SCHWANKL, UCCE Irrigation Specialist, Department of Land, Air, and Water Resources, Kearney Agricultural Center) “Understanding Soil Erosion in Irrigated Agriculture” UNIVERSITY Of CALIfORNIA Division of Agriculture and Natural Resources] AT

In all instances, we must consider soil to be a non-renewable resource. The rate of soil formation is very slow: it takes from 300 to 1000 years for nature to replace the soil that a field can lose to erosion in 25 years at a loss rate of 1 mm per year (Pimentel et al., 1976). In order to manage soils in a sustainable manner, we must take steps to reduce soil erosion.

## T – Effects

### I Meet

#### A similar initiative that supports organic agriculture is meant specifically for environmental protection

UNEP 10 [(United Nations Environment Programme) “organic agricUltUre: oPPortUnities for Promoting trade, Protecting the environment and redUcing Poverty case stUdies from east Africa” Capacity Building Task Force on Trade, Environment and Development] AT

“Promoting Production and Trading Opportunities for Organic Agriculture in East Africa” is an initiative that was undertaken by the United Nations Environment Programme (UNEP)- United Nations Conference on Trade and Development (UNCTAD) Capacity Building Task Force on Trade, Environment and Development (CBTF), and implemented in collaboration with the International Trade Centre (ITC), the Food and Agriculture Organization of the United Nations (FAO), the International Federation of Organic Agriculture Movements (IFOAM), and national institutions in the participating countries. The initiative was designed based on the knowledge that organic agriculture offers a range of environmental, social, and economic benefits for developing countries. To take advantage of these opportunities, governments must create an environment that encourages sustainable growth and development in the sector and that helps producers and exporters of organic agricultural products overcome the obstacles they face. The overarching objective of the CBTF initiative was to contribute to sustainable development, environmental protection, food security, and poverty reduction in three East African countries—Kenya, Tanzania and Uganda—by promoting the production and export of organic agricultural products.

## Subsidies + Bans T

### CI

#### Counter interp: Aff must prioritize a model of resource extraction that protects the environment more than the squo. The aff enforcement mechanism must have a solvency advocate and create incentives via positive or negative incentives.

#### Net benefits:

#### Your interp excludes high-quality literature for arbitrary reasons. My interp allows better discussion of government actions, which include positive incentives like subsidies and pricing.

### A2 Effects T

#### Not effects T – aff creates a different model which is what prioritize means in the topic. Also, none of my advantages are extra topical, which proves no abuse.

#### Lit solves – solvency advocates mean you can research and prepare

### A2 Fink T

#### Not extra topical – the aff creates a model of RE that protects the environment. Solves all of Fink’s abuse since he concedes that any aff will be effects T.

### A2 Ground

#### Turn – your interp is worse since a complete ban of some resource is not real-world and screws the aff every time. Best-case scenario, it incentivizes affs to keep breaking new and never have in-depth debates since all the lit advocates reforming or replacing the process.

#### Impact turn – aff is at an empirical disadvantage, so neg losing some ground is fine.

#### No link – all generic K’s and NC’s still apply to the aff.

#### This begs the question of why you deserve that ground in the first place – even if the topic is unfair, that’s what sets the limits of ground.

## A2 Not Inherent

#### Aff is clearly inherent

Kwa 01 [Aileen Kwa. “Agriculture in Developing Countries: Which Way Forward?” Trade-Related Agenda, Development and Equity (T.R.A.D.E.) Occasional Papers 4. South Centre, June 2001] AJ

The structure of agricultural production in developing countries has radically changed in the last two decades. Since the late 60s and 70s, the World Bank and its various agricultural research institutes have actively promoted the adoption of industrial (high chemical input) agricultural methods such as the Green Revolution ‘miracle’ seeds, promising landfall yields. These high technology methods were expected to benefit all farmers, including the poor. Since yields would increase, incomes were also expected to increase. However, the heavy dependence on imported inputs could not be sustained economically by developing countries. This was compounded, in the 1970s and 1980s, by the oil crisis and the debt crisis. The economic and financial crisis in developing countries led to the proliferation of loan packages from the international financial institutions. Structural adjustment policies were then introduced as a condition for loans borrowed by countries. Since the 1980s, close to 100 countries have been forced to take on structural adjustment packages. The policies included on the one hand forced liberalization, and on the other, the conversion of domestic agricultural production for exports. Over the last two decades, the experience of small farmers from Central to South America, Africa and Asia have been strikingly similar. Many have been pressured to switch from diverse traditional polycultures to monocultures for overseas markets. For example, the provision of extension services and credit were often conditioned upon farmers accepting the new technologies in export crops that were promoted. Farmers have been likewise forced to switch to export crops when local prices in staples and traditional crops have plummeted as a result of cheap subsidized imports often from the industrialized countries flooding the local markets. For the majority of small farmers, the process has been one of systematic impoverishment. Many have even been squeezed out of farming altogether. Instead of abating food scarcity, which has always been the reasoning for public investment in agricultural technology and hybrid seeds, food surpluses are increasing on the world market, yet ironically, for those most in need, hunger and food insecurity remains more of a problem.

# WIP

## Solvency cuts

### Mexican Organiponics

Francis 12 [(Deisy, journalist) “Mexican Promotes Urban Agriculture, with Cuban Help” The Havana Reporter Nov 5] AT

MEXICO CITY.\_ The Cuban model of sustainable agriculture is an inspiration in Mexico City, where yards, empty lots and other patches of land are being transformed into urban vegetable gardens. For a city like this, one of the largest in the world, the idea of creating urban gardens seemed unthinkable, said Rosa Márquez, head of the Secretariat of Rural Development and Community Equity (SEDEREC), in an interview. Mexico has an agreement with Cuba for a small-scale sustainable agriculture project, Márquez explained. Cuban technicians “come regularly for six-month periods to provide follow-up and continuity to the program,” she said. The agreement was signed four years ago between the Cuban Agriculture Ministry and the INIFAT, Mexico’s Institute for Basic Research in Tropical Agriculture. “The possibility of helping people plant their own produce has become important, given a lack of food sovereignty and problems with healthy eating that have led to higher rates of diabetes and obesity among Mexican children,” Márquez said. Outside of the capital, a similar cooperation project is underway in the state of Oaxaca with the participation of Cuban advisors, she noted. Meanwhile, the sustainable agriculture model that is being built in Mexico City based on Cuba’s experience proves that it can be done in a large metropolis, she noted. “If we can do this in a major city, then this method is applicable anywhere,” she said. Márquez also praised Cuba for the service it provides to other nations with its experts, saying that it was a form of encouragement “to return to our traditional, healthy forms of production.” The example “that the Cuban people and government have set for us is that, despite all the adversities and situations that they confront, they have been able to move forward,” she said. According to the UN Food and Agriculture Organization, agriculture in urban areas provides food to almost 700 million urban dwellers, one-fourth of the world’s urban population.

### Specific problems we solve

#### Land issues

Damiani 3 [(Octavio, Rural development specialist, lead consultant for the IFAD) “The Adoption of Organic Agriculture Among Small Farmers in Latin America and the Caribbean Thematic Evaluation” April 2003 Report No. 1337 Document of the International Fund for Agricultural Development] AT

131. Most successful organic producers have owned their own land, and small farmers with unstable land tenure seem to have been unable to produce organic products. The main reason for the exclusion of these small tenants relates to the need to implement land-conservation measures, the most important investment item required in the shift to organic production. First, the returns to land- conservation measures are obtained in the medium and long run, so farmers have not been willing to implement the measures when they have not known how long they would stay on the land. Second, farmers who rent their land need the permission of the landowners to carry out land-conservation measures, a permission that has usually been denied due to the fear of the landowners that they will face more difficulties in evicting tenants in the future if the tenants have carried out improvements on the land. Thus, projects that promote organic agriculture among small farmers should initially concentrate on those farmers who have stable forms of land tenure, preferably secure property rights. In addition, they should promote long-term rental contracts among small producers who rent land and 48 plan to compensate the farmers when the rental contracts end for the residual value of the investments made in improving the land. They should also target landowners with promotional activities to convince them of the importance of land-conservation measures and to obtain their support before promoting organic agriculture among small renters.

#### Money

Damiani 3 [(Octavio, Rural development specialist, lead consultant for the IFAD) “The Adoption of Organic Agriculture Among Small Farmers in Latin America and the Caribbean Thematic Evaluation” April 2003 Report No. 1337 Document of the International Fund for Agricultural Development] AT

137. The transitional period – the first two or three years after a farmer starts to produce organically – is the most difficult period for organic producers in terms of financial needs. During this period, farmers have to carry out soil-conservation measures and pay for certification without being able to obtain premium prices for their output. Thus, small farmers would benefit greatly from access to short-term credit so that they can hire the necessary wage labour. This type of credit will be especially necessary for women producers, who are frequently single and have fewer resources of their own to pay for wage labour. In addition, projects could provide subsidies for these investments in soil- conservation measures and to cover certification costs during the transitional period.

#### Farmers orgs

Damiani 3 [(Octavio, Rural development specialist, lead consultant for the IFAD) “The Adoption of Organic Agriculture Among Small Farmers in Latin America and the Caribbean Thematic Evaluation” April 2003 Report No. 1337 Document of the International Fund for Agricultural Development] AT

39. Producer associations have played a major part in the incorporation of small farmers in organic production for several reasons: (i) They can readily take advantage of economies of scale in the collective marketing of the products of their members and in managing volumes that attract foreign buyers to negotiate with them. Buyers have been eager to negotiate with associations because they have found it easier and cheaper to negotiate and implement contracts with one or a few associations rather than with a large number of small farmers. (ii) They are able to train a large number of small farmers in the basics of organic production and to promote among the farmers the adoption of new technologies of organic production. (iii) They have been able to organize monitoring systems to control the compliance of their members with the standards of organic production. When a monitoring system works well, it serves to decrease significantly the costs of certification for individual association members, as the certification agency does not have to carry out inspections among all association members, but only on a sample of them. (iv) They are able to attract government agencies and NGOs to help them and their members adopt the changes necessary to undertake organic production. 140. Based on this evidence, programmes and projects that promote the adoption of organic crops among small farmers should strongly support farmer associations. This is far from easy, as organic production pose great organizational demands on farmer associations: (i) the organic agricultural products of developing countries are often sold on foreign markets, so the associations have to deal with foreign buyers who are demanding in terms of quality and in the punctuality of deliveries; exporting is also much more demanding in terms of logistics and coordination and (ii) the certification of production requires expensive inspections and certification costs (especially during the transitional period), the establishment and management of a monitoring system and promotion for participation at the grass-roots level in order to discourage free riders. Thus, projects working with small farmers that aim to support organic agriculture should target groups of farmers that have good prospects of succeeding collective ly.

#### Market protections and a2 solvency deficits

Damiani 3 [(Octavio, Rural development specialist, lead consultant for the IFAD) “The Adoption of Organic Agriculture Among Small Farmers in Latin America and the Caribbean Thematic Evaluation” April 2003 Report No. 1337 Document of the International Fund for Agricultural Development] AT

146. Small organic producers and their associations have often taken advantage of government programmes and agencies, receiving public funding and technical assistance to implement the changes necessary to shift to organic production. However, almost none of these agencies, programmes and projects have specifically targeted organic production. Government policies and institutions dealing specifically with organic agriculture have played a marginal part in the emergence of organic products in general and in the success of small organic producers in the case studie s in particular. While this evidence suggests that special policies and institutions may not be necessary, it is important to support their development if they do not already exist for many reasons: 51 (i) Some new requirements in importing countries (mainly the EU) in terms of the development in the exporting countries of laws and institutions dealing with organic agriculture have emerged in recent years. These laws and institutions would reassure the importing countries that organic products are being produced and certified according to the EU standards. (ii) Appropriate laws and institutions dealing with organic agriculture also provide protection to small producers and exporters of organic products if they should encounter any problems in foreign markets. In addition, they are essential in international negotiations with governments to open access to foreign markets. (iii) National laws and regulations may make it possible to reduce the certific ation costs faced by farmers, as they lead to the establishment of nationally based certification firms. (iv) The experience of the countries that have made the most progress in developing specific policies and institutions suggests that a government programme dealing with organic agriculture may be both inexpensive and effective. Such a programme does not require a significant budget or numerous staff to work well. It requires clear ideas and substantial coordination among other government agencies and actors in the private sector so they can combine their efforts and avoid unnecessary duplication.

#### Regulations key

Damiani 3 [(Octavio, Rural development specialist, lead consultant for the IFAD) “The Adoption of Organic Agriculture Among Small Farmers in Latin America and the Caribbean Thematic Evaluation” April 2003 Report No. 1337 Document of the International Fund for Agricultural Development] AT

What role can the State play in the successful adoption of organic agriculture among small farmers? What is and should be the role of policies, regulations and government agencies that deal specifically with organic agriculture? What is and should be the role of macroeconomic and sectoral policies? What could be the roles of international agencies, NGOs and other organizations, and of possible strategic alliances among them? 84. The major role of the state is to coordinate among public sector agencies. Another is to assure that there are no market distortions -- for example subsidies for synthetic agro-chemicals or irrigation for large-scale monocultures – which can inhibit or prevent the chances for adopting alternative systems. In addition, the State can establish or foster policies that favour diversification and that supply public funding for independent research and extension. Promoting consumer awareness is another role that should be taken up by the State, or at least the State should support this activity as well as promote market opportunities, including public/private partnerships and mechanisms that allow public and private interest to be linked. 85. Funds for the transition period, both in on-farm and off-farm investments need to be available, as well as policies that reflect positive and negative externalities, e.g. fines for pollution, payments for environmental services. A legal framework must also be in place that helps farmers to establish legal entities that function and support their interests. In addition, contracts between sellers and buyers must be enforced. Certification standards for both domestic and international consumption need to be harmonized, at least on a regional basis. 86. Multi-lateral and bilateral support should be provided to governments in order to establish enabling environments – that is, those conditions that help to implement the transition and to foster the adoption of organic systems. Capacity building at national and local levels is essential. Support should also be given toward public infrastructure development (e.g., testing laboratories, storage facilities) and toward financing of NGO support, particularly the role of local NGOs, as well as providers of such services as training of local inspectors, establishing internal control systems, training and extension. In addition, NGOs and other agencies could provide market brokerage and support the development of farmers’ associations and cooperatives. They also have an important role to play in coordinating policy among governments and donors and in instilling more confidence on the part of local and national banks to provide credit and funds for alternative schemes.

### General

#### Gov support key

Damiani 3 [(Octavio, Rural development specialist, lead consultant for the IFAD) “The Adoption of Organic Agriculture Among Small Farmers in Latin America and the Caribbean Thematic Evaluation” April 2003 Report No. 1337 Document of the International Fund for Agricultural Development] AT

105. Argentina is the country that has made the most progress in the creation of a legal framework and government agencies to deal with organic agriculture (see Box 8). As a result, it is the first and only Latin American country to obtain third-country status from the EU, which means that the organic standards and certifications in Argentina are considered equivalent to the ones in the EU. Costa Rica was also able to make significant progress and applied for third-country status in the late nineties, though it has not obtained it yet (see Box 9). In contrast, El Salvador and Mexico have no government agency or programme dealing specifically with organic agriculture, and they have limited and mostly outdated legislation concerning organic production. The Dominican Republic and Guatemala recently approved general rules and regulations, but these are incomplete. In the former, several NGOs specialized in organic agriculture, as well as the main farmer organization representing farmer interests, have criticized the regulations, arguing that they have not been established in a participatory manner and that they present several problems. The Dominican Republic created a department within the Secretariat of Agriculture to deal with organic agriculture, but the department focuses only on promotion and training among farmers and is very poorly funded.

1. Investments in infrastructure 111. Investments in infrastructure have been key in the development of the production of organic coffee in Guatemala and organic vegetables in El Salvador. The two countries experienced persistent armed conflicts that dramatically affected government investments in rural infrastructure, the access to government agencies (for example, extension services) and financial institutions and the marketing of agricultural products. Peace agreements in the early nineties led in both cases to more favourable conditions for agricultural production, facilitating product marketing, access to public and private agencies and services and government investments in rural infrastructure. This had a direct impact on organic producers. In El Salvador, vegetable producers benefited from the reconstruction of access roads to Las Pilas. This reduced the cost of transporting vegetables to San Salvador and also eliminated some of the great loss in product quality that had been a result of the bad roads and travel conditions. The coffee producers in Guatemala benefited from the construction of a road connecting the communities of Cocolá and Chojzunil – where the organic coffee producers of ADIPCO, Quixabaj and Chojzunil are located – with the town of Barillas. Farmers in the three associations had previously transported their coffee to Barillas on animals, a trip that took one day and cost GTQ 30 (about USD 3.80) per quintal. The new road allowed them to use trucks instead of animals, decreasing the trip to four hours at a cost of GTQ 15 (about USD 1.90) per quintal. 23 2. Rural development programmes and projects 112. Most of the small organic producer associations in the case studies receive several forms of support from government agencies and programmes. While these agencies and programmes do not specifically focus on promoting organic agriculture, they are either flexible enough to support organic farmers in several ways, or they support organic agriculture as a result of the initiative of technical staff. In this way, they have played a major part in the development of several of the small organic production operations. 113. In El Salvador, Guatemala and Mexico (in the Yucatan Peninsula), rural development projects funded by IFAD and implemented by government agencies (the Ministries of Agriculture in El Salvador and Guatemala and INI in Mexico) had the main role in the development of organic production among the small farmer associations under study. These projects supported organic agriculture even though the project design did not include it as a production alternative. The main forms of support included the provision of extension services, subsidies to cover certification costs, and the strengthening of farmer associations, mainly in terms of management capacity, the organization of a monitoring system to control compliance with the standards of organic production, and contacts with markets. 114. In Mexico, the Government implemented several rural development programmes and projects, including the Alliance for the Countryside and Procampo, as a part of national policies in favour of agricultural and rural development. These programmes provided subsidies to both farmer associations and their individual members for investments, inputs, technical assistance, training and research in a great variety of agricultural activities (see Box 10). While they did not target organic producers, they were a significant initiative in favour of farmers who shifted to organic production.

#### Squo fails

Damiani 3 [(Octavio, Rural development specialist, lead consultant for the IFAD) “The Adoption of Organic Agriculture Among Small Farmers in Latin America and the Caribbean Thematic Evaluation” April 2003 Report No. 1337 Document of the International Fund for Agricultural Development] AT

115. Though some government programmes and projects provided essential support to small farmers who produced organically, government policies sometimes created obstacles to organic production. Trade liberalization policies that became popular during the nineties in all the countries in the study, such as the elimination of import licenses and the reduction of tariffs for fertilizers, pesticides and herbicides, made it easier and cheaper to import and use these inputs. In Argentina, the overvaluation of the national currency beginning in the early nineties increased the relative price of labour – the most important input among organic producers – and decreased the relative price of chemical inputs, many of which were imported. In some countries, government agencies and programmes dealing with rural poverty distributed free inputs in poor areas. For example, the Ministries of Agriculture in Guatemala and Secretariat of Agriculture in the Dominican Republic distributed free seeds and fertilizers among poor rural communities. In the Dominican Republic, the Dominican Agro- Entrepreneurial Board – the main organization representing the interests of agricultural and agro- processing firms and farmers – and the Dominican Organic Agriculture Association – the main representative of the organic agriculture movement – convinced the Secretariat of Agriculture to differentiate between organic and conventional producers and distributed organic inputs among the former. In Mexico, the Alliance for the Countryside, the most important rural poverty programme, provided subsidies that promoted the use of chemical inputs. The programme frequently supplied inputs that did not comply with the standards for organic production (for example, chemical inputs to honey producers so that they could fight against varroasis). In addition, while the Alliance for the Countryside was favourable to financing organic methods of production, it relied heavily on conventional methods of production and supported technologies through specific programmes, such as irrigation, mechanization and greenhouse agriculture, that are often associated with the intensive use of chemical inputs. Because organic certification requires that a minimum distance be maintained between organic crops and conventional crops, the expansion of conventional agriculture created a problem for many organic producers. This problem mainly affected organic honey producers, who are required to keep their apiaries at least 3 km from any crop on which chemical inputs are used. These actions promoted the application of chemical inputs, making it more difficult to introduce organic methods of production.

#### Challenges and ways to overcome them

Chang 7 [(Ping, Deputy Director and Senior Expert, United Nations Asian and Pacific Center for Agricultural Engineering and Machinery) “Towards Sustainable Agriculture: Challenges and Opportunities” United Nations APCAEM Nov 2007] AT

The rapidly increasing population and decreasing arable land, particularly in the Asian and Pacific region, require more intensive farming activities for food security. The more intensified farming activities, in turn, degrade the limited land and the environment. To break such a vicious cycle and move toward healthier and sustainable agriculture development, CA is a viable option for more efficient method of agricultural production with the minimal adverse impact on the farming environment. However, CA was adopted relatively slowly so far in the large farming areas in Asia. It took 15 years for Pakistan and 10 years for India to reach significant adoption of the zero tillage component of CA with wheat. Other areas have adopted some aspects of this technology, usually zero-tillage, but permanent soil cover needs to be integrated into farming systems to obtain additional benefits. This is the case in the rice-wheat areas of South Asia where farmers are obtaining higher wheat yields at less cost by adopting zero tillage. It also took some 15 years to conduct experiments on conservation tillage in China. There is a great potential for expanding conservation tillage in this big agricultural country. There are several constraints and limitations to the adoption due to lack of CA, availability of direct seeding machines, inadequate knowledge, and institutional support, as well as the farmer’s attitudes toward CA. Lack of direct seeding implements for planting into the permanent soil cover is one of the main limitations. In order to implement CA, the minimum a farmer needs is a zero-tillage planter. Buying one without knowing the system or even having seen it first is a risk that few farmers take. Machinery dealers might not wish to promote CA as long as it is not supported by extension. This is partly due to the cost of the equipment but, more importantly, because the widespread adoption of CA will reduce machinery sales, particularly of large tractors. The cost-effective and efficient direct seeding machines suitable in Asian countries, especially the lower horsepower tractors, are in urgent need. Farmers in this region are primarily characterized as “small holders” and possess a very limited or no risk-bearing capacity towards ready acceptance of any newly-proposed technological shift. Lack of knowledge and information is another constraint to minimum/no-tillage adoption in most Asian countries. Information has to be relevant, factual, locally appropriate, and useful in order to generate mindset change among farmers. For instance, the biggest challenge a farmer has to face when moving from conventional to minimum/no-tillage is weed and disease control. To be able to manage this new situation, a farmer has to have sound, site specific knowledge on herbicides, weeds and application technology. Another impediment to accelerated adoption is the farmer’s mindset that favors the status quo ontillage and the fear of failure. CA contravened the conventional wisdom built up over thousands of years about the benefits of tillage. Farmers had to experiment with minimum/no-tillage to convince themselves that it works but many are still hesitant to take any risk. Past successful experiences show the first years might be very difficult for farmers, meaning they might need moral support from other farmers or from extension services and perhaps even financial support (to invest in zero tillage planters). Based on the above, the following policy recommendations might be worthy of consideration: An institutional framework of government services to mainstream sustainable agriculture development and GHG mitigation into national policies, laws, investment strategies, education and extension programmes; Raise public awareness to facilitate the extension of CA techniques by full involvement of all concerned stakeholders, including farmers, researchers, technicians, extension specialists and agronomists; Enhanced research and manufacturing of suitable direct seeding implements supported by both public and private sectors; Sharing of knowledge about all aspects of minimum/no-tillage system by farmers, researchers, technicians and extension specialists; Demonstration of good practices to promote farmers’ mindset change toward minimum/no-tillage CA; Subsidies for buying new implements and phasing out of the old ones; Policy on financing the application of CDM in agricultural sector; Promote the public-private partnership in financing of the CDM application to the agricultural sector.

### Africa

#### Agriculture in SSA is weak – gov funding is key

Kaplan 13 [(Marcus, Environmental Policy and Natural Resources Management; Chinwe Ifejika Speranza, PhD, Senior Research Scientist for the Center for Development and the Environment; and Imme Scholz, Deputy Director of the German Development Institute, Member of the advisory council of the Austrian Research Foundation for International Development, Member of the German Council for Sustainable Development) “Promoting Resilient Agriculture in Sub- Saharan Africa as a Major Priority in Climate-Change Adaptation” Part of the report “Trade and Environmental Review 2013” by United Nations Conference on Trade and Development. German Development Institute] AT

In many rural areas of SSA, agriculture faces various well-known challenges, which constrain the social and economic development of the sector and of the people who depend on it. The fundamental constraints include insecure access of local producers to land, unskilled agricultural manpower for innovative agricultural production systems, limited access to agricultural inputs, as well as limited knowledge of how the local climate (e.g. homogeneous rainfall zones that extend over villages) is changing and is expected to change in the future. These constraints result in lower productivity (Bruinsma, 2009; Rosegrant et al., 2001) and the prevalence of unsustainable agricultural with negative ecological impacts. Water stress and scarcity are increasing, while biodiversity is declining. Soil degradation and declining fertility through, for example, inappropriate soil management and low inputs, create serious problems for current and future agricultural productivity in many parts of SSA (Mclntyre et al. 2009a; Vlek, Le and Tamene, 2008). Furthermore, low-output agriculture necessitates the use of more land to maintain its level of production, which is why agriculture is the main driver of deforestation in nearly all developing countries (Scherr and Sthapit, 2009). Such land-use changes for food production cause C02 emissions through the release of carbon from above-ground biomass and grazing livestock, reduced carbon sequestration in soils and unsustainable agricultural practices (Scherr and Sthapit, 2009). As a result, land-use changes (including deforestation) account for about 17 per cent of total anthropogenic GHG emissions (Smith et al., 2007b), while biomass burning and the conversion of wetlands contribute to methane (CH4) emissions, and the application of fertilizers results in nitrous oxide emissions (UNFCCC, 2008). Today, new global patterns create additional challenges that further aggravate these known constraints on a productive and sustainable agricultural sector in SSA. In addition to economic trends, such as greater international competition for land for various uses, fluctuating food prices, higher energy prices, and international trade policies, climate change seriously threatens the productivity of the agricultural sector and its contribution to economic and social development. The poorer people who depend directly on ecosystem services for their livelihoods are the most vulnerable to permanent changes in temperature and water availability, as well as to an overall higher variability in climatic patterns. They not only have less access to various types of resources, but they also have fewer opportunities for diversifying their livelihoods to include other income-generating activities in order to reduce their dependence on agriculture and other ecosystem services. One of the main reasons for the poor situation and the high vulnerability of farmers and agriculture in SSA is the long-term neglect of this sector by both national governments and the international donor community starting in the 1980s. Public spending on farming accounts for only 4 per cent of total government spending in SSA (World Bank, 2008), and the agricultural sector is taxed at a relatively high level. In addition, the share of the agricultural sector in official development assistance (ODA) declined from 18 per cent in 1979 to 3.5 per cent in 2004 (World Bank, 2008). Today, the importance of agriculture for economic growth has generally been recognized, and national, regional and international organizations are making greater efforts to support its development (Challinor et al., 2007; Hazell et al., 2007). In their Maputo Declaration of 2003, member countries of the African Union called upon African governments to increase investment in the agricultural sector to at least 10 per cent of their national budgets. However, most African countries are still far from reaching this target. Moreover, even though the sector is now receiving more attention, owing to the long period of neglect, the many challenges ahead will be difficult to overcome. Furthermore, most public transfers are largely aimed at mitigating climate change rather than supporting adaptation to its impacts: 79 per cent of dedicated multi- and bilateral funds were approved for mitigation projects (84 per cent if activities for reducing emissions from deforestation and forest degradation (REDD) are included), and only 14 per cent for adaptation 37 projects. Bilateral ODA shows a slightly different pattern, with 70 per cent approved for mitigation and 30 per cent for adaptation (UNER 2010). Moreover, most activities and funds focus on reducing emissions and increasing efficiency in the energy and transport sectors, while adaptation and mitigation in agriculture are still underfunded. Looking at bilateral ODA again, agriculture received only 1 per cent of all funds dedicated to mitigation, compared with 10 per cent for adaptation activities in 2009 (UNER 2010).

#### Kenyan solvency

Mwaura 10 [(Michael, Jomo Kenyatta University of Agriculture and Technology) “Cuba: National policy for sustainable agriculture” Kenya for the People, Feb 6] AT

In the previous article, we took the position that sustainable agriculture was the way forward to help build vibrant rural economies. In this article, we will study Cuba as a success story in sustainable organic farming. This farming revolution was forced upon the Cuban people by their practice of agribusiness to serve an export market that collapsed after the Soviet Union withdraw support. This situation is eerily similar to what is being practiced in Kenya today by the growing of cash crops for export although not to such a grand scale. The article below has been gleaned from several sources. A brief history From 1492 to 1898, Cuba was a colony of Spain. Both the native people and the forest were annihilated to make way for large cattle and sugar farms in the hands of a few wealthy owners and worked by slaves. In 1898, the United States entered into the Spanish-American war, Spain was easily defeated, and Cuba was under US military rule from 1898 to 1902. Over the next few decades, U.S businesses and individuals acquired some of the best land and US marines were stationed in Cuba to protect US interests. Sugar production continued to increase in importance at the expense of food production, which caused greater reliance on food imports. Wealth was concentrated in a few hands, and the vast majority of Cubans continued to live in poverty without access to land or incomes sufficient to feed their families. On December 31, 1958, the Batista government was overthrown, and a socialist government took power. The expropriation of US property in Cuba led to a US policy of isolation. By 1960, the isolationist policies caused Fidel Castro to turn to the Soviet Bloc. By 1962, Cuba effectively was a Soviet satellite. Cuban agricultural policies followed the Soviet model—large monocultural state farms were highly mechanized and heavily reliant on chemical fertilizers and pesticides. The Soviet Union subsidized this industrial model by trading its oil, chemicals, and machinery for Cuban sugar at preferential rates. Then, in 1989, the Berlin Wall fell. Almost overnight $6 billion in Soviet subsidies to Cuba disappeared. At the same time, the US trade embargo tightened, and Cuba was plunged into an economic crisis that was further exacerbated by the United States passing the "Cuban Democracy Act," in 1992 which prohibited assistance to Cuba in the form of food, medicine, and medical supplies. State implemented reform Cuba radically changed the state sector in 1993; 80% of the farmland was then held by the state and over half was turned over to workers in the form of cooperatives-UBPC (Basic Unit of Cooperative Production). Farmers lease state land rent free in perpetuity, in exchange for meeting production quotas. A 1994 reform permitted farmers to sell their excess production at farmers' markets. The reforms emphasized five basic principles: • Focus on agro ecological technology: this was supported by the state/university research, education, and extensions system. • Land reform; state farms were transformed to cooperatives or broken into smaller private units, and anyone wishing to farm could do so rent free. • Fair prices to farmers: Farmers can sell their excess production at farmers' markets; average incomes of farmers are three times that of other workers in Cuba. • Emphasis on local production: Urban agriculture played a big part in this reform. More on this below. • Farmer-to-farmer training:this served as the backbone of the extension system. Urban Agriculture Another area in which an innovative approach has been applied is that of urban agriculture. The Cuban government promoted and nurtured the public enthusiasm for urban agriculture. It ruled that any unused city lot, even state-owned, could be taken over by citizens to grow food. Growers were permitted to sell their surpluses on the open market. Government programs were launched to help city folks learn to farm. Experts explained organic growing, composting, and natural pest control and water conservation. Shops were opened to sell seeds and supplies. An estimated 1,000 kiosks for fresh local produce were set up at farm gates and busy street corners throughout Havana. The popular gardens range in size from a few square meters to large plots of land which are cultivated by individuals or community groups. Production in other agricultural areas The reforms have not yielded dramatic results for sugar, meat, or dairy, nor for traditional import crops (rice and beans). Cuba continues to rely on food imports, as it has since it was colonized. Cuba buys rice from India and China, dairy products from the European Union, grains from South America and Eastern Europe, and meat from Canada and Brazil. Cuba has to buy these products from distant countries, adding on average 30% to the cost of food imports over what they would pay for US products. Effect on meat production Meat production and dairy production were hit particularly hard by the loss of subsidized Soviet feed and petroleum. The loss of petroleum meant that animal traction became a strategy to reduce reliance on farm machinery. Animal traction is also better for soil management, particularly given the smaller farm size after land was redistributed. However, the conversion to animal traction was impeded by lack of oxen and expertise. The solution was to prohibit slaughter of cattle without government permission (in order to build up the herd) and to create "schools" to train the oxen (and presumably farmers). Other government programs Social equity is a clearly a higher priority for the Cuban government than personal liberty. Despite being the second poorest country in the Americas, there is no widespread hunger; housing is generally free, if dilapidated and crowded; Cubans are one of the most educated populations in the world; and there is universal free health care. All Cubans have access to a basic (although minimal) diet through their ration card. Cubans supplement this with food they grow, barter for, or buy at farm stands, farmers' markets, or dollar stores. The Future It seems likely that Cuba will continue to promote agro ecological practices and to expand urban agriculture simply because they are yielding results. The bad experiences with large agricultural operations, both before and after communism, make it unlikely that anyone could credibly promote a return to large, high-input operations as a matter of national policy. The positive results that farmers, university researchers, and extension are getting from the transformation of Cuban agriculture will likely encourage them to continue to pursue sustainable practices whatever comes next. Cuban people are eating better and healthier than before, though things are far from perfect. However, the relevant comparison is to other Latin American countries; Cuba simply does not have the widespread hunger, destitution, and suffering that are commonplace in countries with much higher GDP per capita. Conclusion There are many lessons we can learn from Cuba for Kenya: • The government giving citizens plots to farm on in urban areas could go a long way to alleviate hunger and stabilize our food supplies in the urban areas. • The food ration card to ensure all Kenyans get access to a basic diet is a positive. The government could contract local and rural farmers for this program. • A barter system, food for food or food for services by urban and rural farmers would be an idea worth researching and implementing. • The possible establishment of a sustainable agricultural department by the government to train urban and rural farmers in organic agriculture • Discounted availability of seeds and agricultural supplies would help potential urban and rural farmers.

## Africa

### random

#### African agriculture’s unsustainable now – causes deforestation, warming, and famines

Kaplan 13 [(Marcus, Environmental Policy and Natural Resources Management; Chinwe Ifejika Speranza, PhD, Senior Research Scientist for the Center for Development and the Environment; and Imme Scholz, Deputy Director of the German Development Institute, Member of the advisory council of the Austrian Research Foundation for International Development, Member of the German Council for Sustainable Development) “Promoting Resilient Agriculture in Sub- Saharan Africa as a Major Priority in Climate-Change Adaptation” Part of the report “Trade and Environmental Review 2013” by United Nations Conference on Trade and Development. German Development Institute] AT

In many rural areas of SSA, agriculture faces various well-known challenges, which constrain the social and economic development of the sector and of the people who depend on it. The fundamental constraints include insecure access of local producers to land, unskilled agricultural manpower for innovative agricultural production systems, limited access to agricultural inputs, as well as limited knowledge of how the local climate (e.g. homogeneous rainfall zones that extend over villages) is changing and is expected to change in the future. These constraints result in lower productivity (Bruinsma, 2009; Rosegrant et al., 2001) and the prevalence of unsustainable agricultural with negative ecological impacts. Water stress and scarcity are increasing, while biodiversity is declining. Soil degradation and declining fertility through, for example, inappropriate soil management and low inputs, create serious problems for current and future agricultural productivity in many parts of SSA (Mclntyre et al. 2009a; Vlek, Le and Tamene, 2008). Furthermore, low-output agriculture necessitates the use of more land to maintain its level of production, which is why agriculture is the main driver of deforestation in nearly all developing countries (Scherr and Sthapit, 2009). Such land-use changes for food production cause C02 emissions through the release of carbon from above-ground biomass and grazing livestock, reduced carbon sequestration in soils and unsustainable agricultural practices (Scherr and Sthapit, 2009). As a result, land-use changes (including deforestation) account for about 17 per cent of total anthropogenic GHG emissions (Smith et al., 2007b), while biomass burning and the conversion of wetlands contribute to methane (CH4) emissions, and the application of fertilizers results in nitrous oxide emissions (UNFCCC, 2008). Today, new global patterns create additional challenges that further aggravate these known constraints on a productive and sustainable agricultural sector in SSA.

#### Refugee crisis, war, antibiotic resistance all cause disease spread

WHR 96 [(excerpt from the World Health Report 1996 pp 1-4) prepared by the World Health Organisation] AT

Until quite recently, the global war against infectious diseases appeared to be on the road to victory. However, the advent of new infectious diseases and the re-emergence of old ones in areas of the world avowedly free of such diseases, have precipitated a new health crisis which threatens to overwhelm the gains so far made. UNTIL a relatively few years ago, there was a sense of opti- mism that the long struggle for control over infectious diseases was almost over. Smallpox was eradicated. Poliomyelitis, guinea-worm disease, leprosy, Chagas disease and neonatal tetanus were targeted for eradication or elimination. Some 8 out of 10 of the world's children were immunised against half a dozen killer diseases. Antimicrobial drugs were effectively suppressing countless infections. But cautious optimism has turned into a fatal complacency that is costing millions of lives every year. The struggle for control, far from being over, has reached a critical stage. Infectious diseases remain the world's leading cause of death, accounting for at least 17 million (about 33%) of the 52 million people who die each year. Apart from those 17 million - about 9 million of whom are young children - up to half the world's population of 5.72 billion people are at risk of many endemic diseases. Diseases that used to be restricted geographically, such as cholera, are now striking in regions once thought safe. While some diseases have been almost completely subdued, others such as malaria and tuberculosis that have always been among our greatest enemies are fighting back with renewed ferocity. The role of infectious agents in the development of many types of cancer is becoming more evident. New diseases, new threats New and emerging diseases, combined with the rapid spread of pathogens resistant to antibiotics and of disease-carrying insects resistant to insecticides, are daunting challenges to human health. The new diseases range from AIDS to little-known but equally lethal viral infections. In many cases, their source is unknown, as is the reason for their emergence. More often than not, no specific treatment is yet available for them. Antibiotic resistance in hospitals worldwide threatens to leave medical and public health workers virtually helpless in the prevention or treatment of many infections. Many of the most powerful antibiotics have been rendered impotent. Disastrously, this is happening at a time when too few new drugs are being developed to replace those that have lost their effectiveness. In the contest for supremacy, the microbes are sprinting ahead. The gap between their ability to mutate into drug-resistant strains and man's ability to counter them is widening fast. These are tragic developments, given the achievements that have been made in global disease control. The discovery of antibiotics, the development of vaccines and, more importantly, the introduction of environmental sanitation measures coupled with better understanding of infectious disease epidemiology, have been invaluable weapons in the fight for human health. The price of failure The re-emergence of infectious diseases is a warning that progress achieved so far towards global security in health and prosperity may be wasted unless effective development policies are formulated, and commitments are made to implement them nationally and internationally. Infectious diseases range from those occurring in tropical areas (such as malaria and dengue haemorrhagic fever, which are most common in developing countries) to diseases found worldwide (such as hepatitis and sexually transmitted diseases, including HIV/AIDS) and food-borne illnesses that affect large numbers of people in both the richer and the poorer nations. The struggle for control A few examples illustrate the impact of infectious diseases on human health and development: \* Malaria - the worst of the insect-borne diseases - still strikes up to 500 million people a year, killing at least 2 million. \* Acute lower respiratory infections kill almost 4 million children every year. Tuberculosis, similarly spread from person to person, kills 3 million people a year and one-third of the global population carries the bacilli that cause it. \* Diarrhoeal diseases, spread chiefly by contaminated water or food, kill nearly 3 million young children every year. Cholera epidemics are occurring in countries ranging from South-East Asia to the Middle East, and as far apart as western Africa and South America. \* HIV, the virus that causes AIDS, is predominantly transmitted sexually, and has already infected up to 24 million adults, of whom at least 4 million have died. More than 330 million new cases of other sexually transmitted diseases occurred in 1995. \* Viral hepatitis is another major problem worldwide. The term is used to describe a group of several distinct infections which are similar in many ways, but which nevertheless differ in some of their characteristics, and in their prevention and control. At least 350 million people are chronic carriers of the Hepatitis B virus, and another 100 million are chronic carriers of the Hepatitis C virus. At least a quarter of them will die of related liver disease. \* Some of the 10 million new cases of cancer diagnosed in 1995 were caused by viruses (Hepatitis B and Hepatitis C among them), bacteria and parasites. WHO estimates that 15% of all new cancer cases could be avoided by preventing the infectious diseases associated with them. Breaking the chains In all types of infectious disease, prevention and control depend on breaking the chains of transmission. A handful of diseases are within range of elimination or eradication in the next few years and others are under control, thanks largely to effective public health measures (particularly global immunisation programmes) and other interventions. Poliomyelitis and guinea-worm disease, for example, could be eradicated by the end of the century. Other diseases, such leprosy, could be eliminated as public health dangers by reducing their prevalence to a very low level. Attaining freedom from infectious disease is one of humanity's foremost preoccupations. But breaking the chains that shackle people to these diseases is an immensely difficult task. It has been fully achieved only once, with the last reported case of smallpox in 1977. The fact that such success has not been repeated is due not primarily to lack of knowledge or tools, but more to logistics problems and a series of events and developments, some natural and others man-made, that have occurred in recent years. Some are poverty-related, while others are the consequences of economic prosperity. Obstacles to success Poverty is on the increase, so that hundreds of millions of people are bound by their living conditions to the daily hazard of infectious disease. More than one-fifth of the world's population lives in extreme poverty. Almost a third of all children are undernourished. Half the people in the world lack regular access to the most needed essential drugs. Continuing global population growth, combined with rapid urbanisation, means that many millions of city dwellers are forced to live in overcrowded and unhygienic conditions, where lack of clean water and adequate sanitation provides breeding grounds for infectious disease. High-density populations raise the risk of respiratory disease and those transmitted through contact with pathogens in food and water. In addition, more than 90% of expected population growth in the coming decades will be in the developing regions of Africa, Asia and Latin America - the regions of richest biological diversity. Human encroachment on tropical forests has brought populations with little or no disease resistance into close proximity with insects that carry malaria and yellow fever and other, sometimes unknown, infectious diseases. Because of the economic and social crises that still affect many countries, health systems which should offer protection against disease have, in extreme cases, either collapsed or not even been built. The immediate result is a resurgence of diseases that were once under control or should be controllable, given adequate resources. Disabled by these diseases, some societies are unable to get themselves back on their feet and cannot afford the health services that they need. Migration and the mass movement of millions of refugees or displaced persons from one country to another - as the result of wars, civil turmoil or natural disasters - also provide fertile breeding grounds for infectious diseases and keep them on the move.

#### bioD k2 food

M2 Presswire 04. (“UN”, October 20, lexis)

MARJATTA RASI (Finland), President of the Economic and Social Council, said despite progress in many countries toward achieving the Millennium Goal of halving the number of people suffering from hunger by 2015, less than 20 per cent of sub-Saharan African countries would meet that target. Malnutrition was increasing in some countries. The interaction of biodiversity and food security was complex, she said. Education, national and global policy-making and legal frameworks were needed for local communities to protect ecological diversity, develop diversity protection policies and determine the ownership and use of humanity's genetic reservoir of knowledge. Men and women played different roles in the maintenance of dependence on biodiversity. Biodiversity decreased farming risks, increased food security and improved the genetic potential of crops and animals. Safeguarding biodiversity also meant safeguarding traditional agricultural knowledge and management systems. Policy-makers and implementers must develop long-term thinking that took into account the links between economy and ecology, society and environment, politics and long-term security. LOUISE FRECHETTE, Deputy Secretary-General of the United Nations, delivering a message from Secretary-General Kofi Annan, noted that some 840 million people in the world suffered from chronic hunger, which should be unacceptable in today's world of plenty. The international community must do better - politically, economically, scientifically, and logistically - to reduce by half the proportion of people suffering from hunger by 2015. She said that this year's World Food Day theme highlighted the essential role of biodiversity in combating hunger. Biodiversity provided the plant, animal and microbial genetic resources for food production and agricultural productivity. It provided essential ecosystem services, such as fertilizing the soil, recycling nutrients, regulating pests and disease, controlling erosion and pollinating many crops and trees. Knowledge of biodiversity could ensure the availability of food during crisis periods like civil conflict, natural catastrophes or disabling diseases. The unprecedented loss of biodiversity over the past century should raise the loudest of alarms, she said. Several freshwater fish species had become extinct, and many of the world's most important marine fisheries had been decimated. Food supplies had also been made more vulnerable by the reliance on a small number of species. Just 30 crops species dominated food production and 90 per cent of the animal food supply came from just 14 mammal and bird species. There had been a substantial reduction in crop genetic diversity in the field and many livestock breeds were threatened with extinction. Individuals and institutions alike must pay greater attention to biodiversity as a key theme in efforts to fight the twin scourges of hunger and poverty.

### Small farmers

#### Organic production benefits small farmers

Damiani 3 [(Octavio, Rural development specialist, lead consultant for the IFAD) “The Adoption of Organic Agriculture Among Small Farmers in Latin America and the Caribbean Thematic Evaluation” April 2003 Report No. 1337 Document of the International Fund for Agricultural Development] AT

124. The shift to organic production led to positive impacts on the incomes of small farmers in all the case studies. While the case studies showed different situations in terms of how production costs, yields and product prices evolved among small farmers who shifted to organic agriculture, in all cases organic producers obtained higher net revenues relative to their previous situation. The sustainability of these effects depends on many factors, including the capacity to maintain similar or higher yields (which depends partly on using organic fertilizers to compensate for the nutrients extracted by the crops) and the future evolution of the prices of organic products. 125. The evolution of production costs has been related to the characteristics of the previous production system. Farmers who used to apply conventional production systems and technologies closer to those in organic production (coffee in Guatemala and Mexico, cacao and bananas in Costa Rica, bananas in the Dominican Republic, honey in Mexico) experienced an increase in production costs because they had to introduce improvements in the technologies of production. Most of these technologies were labour intensive, and small farmers used mainly family labour to cover the higher demand for labour. In addition, farmers also faced new costs related to the certification of production. In contrast, those farmers who used to apply chemical inputs before shifting to organic methods of production (sugar cane in Argentina, vegetables in El Salvador) experienced a decrease in the total production costs, even though they experienced higher labour costs. 126. Those farmers who used to produce under systems of production closer to organic systems experienced a rapid increase in yields after shifting to organic methods of production. In contrast, those who used to apply chemical inputs obtained lower yields during the first years after the shift. Farmers in some cases (bananas in the Dominican Republic, honey in Mexico) experienced no significant changes in yields. Meanwhile, all those who shifted to organic production obtained prices for their products that were higher than those obtained by similar conventional producers located close by. While the higher prices may be explained by the organic nature of the products, the type of relationship that farmers established with buyers also played a key role in the price margins. Thus, higher prices were obtained by farmer organizations which had succeeded in developing long-term relationships with buyers. 127. Interestingly, small farmers dominated organic production in all the countries where the case studies were located. In fact, most organic producers in these countries – and in most of the Latin American countries – were small farmers, and small farmers accounted for most of the area under organic production everywhere except in Argentina. Such a dominant share in organic farming suggests that small farmers may have a comparative advantage in organic production. First, most small farmers in LAC already produce more or less ‘organically’, using few or no chemical inputs, and frequently grow crops under the forest and mixed with other species. Thus, they find the shift to organic production relatively easy because they have to introduce only marginal improvements to the technologies they already apply. In addition, they are not likely to experience a higher incidence of pests and disease after they start to produce organically. In contrast, larger and more well capitalized farmers who produce employing technologies based on chemical inputs often face more difficulties when shifting to organic production because they need to learn technologies that are quite different, and their crops are initially more affected by pests and disease. Finally, the technologies of organic production require little investment and are labour intensive. They thus rely on the factors of production most available to small farmers.

## Pesticides

#### Alternative farming solves pests.

Miguel Altieri, February 2001. Professor of agroecology at the University of California in Berkeley. “The Ecological Impacts of Agricultural Biotechnology,” http://www.actionbioscience.org/biotech/altieri.html.

Several people think that HRCs and Bt crops have been a poor choice of traits to feature the technology, given predicted environmental problems and the issue of resistance evolution. In fact, there is enough evidence to suggest that both these types of crops are not really needed to address the problems they were designed to solve. On the contrary, they tend to reduce the pest management options available to farmers. There are many alternative approaches, (e.g., rotations, polycultures, cover crops, biological control, etc.) that farmers can use to effectively regulate the insect and weed populations that are being targeted by the biotechnology industry. To the extent that transgenic crops further entrench the current monocultural system, they impede farmers from using a plethora of alternative methods. 2

## Solvency Cards

We control uniqueness—industrial ag causing food crisis now—only transition to sustainable solves.

CNS, 5/23/2008. “Vatican rep says rise in food prices threatens lives of 1 billion,” Catholic News Service, http://www.catholicnews.com/data/stories/cns/0802808.htm.

VATICAN CITY (CNS) -- A Vatican representative said the recent rise in global food prices threatens the lives of the 1 billion people who spend most of their daily income in search of food. The current food crisis shines "a red light of alarm" on structural injustices in the agricultural economy worldwide, Archbishop Silvano Tomasi told the U.N. Human Rights Council in Geneva May 22. It was the second strong statement in less than a week by Vatican officials on the food crisis, which has sparked riots in several countries in recent months. The Vatican released a copy of the text May 23. The U.N. Food and Agriculture Organization in Rome reported food prices have risen 45 percent over the last nine months, with the price of rice increasing 83 percent since December. Much of the increase has been blamed on higher fuel costs. Archbishop Tomasi, who addressed a special session of the council on the right to food, said the surge in food prices threatens the stability of developing countries and calls for urgent international action. "It calls attention to the dysfunction of the global trade system when 4 million people annually join the ranks of the 854 million plagued by chronic hunger," he said. "Hopefully, this session will open the eyes of public opinion on the worldwide cost of hunger, which so often results in lack of health and education, conflicts, uncontrolled migrations, degradation of the environment, epidemics and even terrorism," he said. The archbishop said the current increase in prices may cause some inconvenience to families in developed countries, who spend about 20 percent of their income on food. "However, such prices are life-threatening for the 1 billion people living in poor countries, since they are forced to spend nearly all their daily income of $1 per day in search of food," he said. Archbishop Tomasi emphasized that, according to numerous studies, the current crisis is caused not by lack of food but by lack of access to agricultural resources. The problem is fixable, he said, but not without structural changes. One problem, he said, is that the liberalization of trade in agricultural products tends to favor multinational businesses and harm production by small farms, which remain the base of food security in developing countries.

b. Recent UM study.

UM News, 7/10/2007. “Organic farming can feed the world, U-M study shows,” Ivette Perfecto, professor at U-M's School of Natural Resources and Environment, and one the study's principal investigators. Catherine Badgley, research scientist in the Museum of Paleontology, http://www.ns.umich.edu/htdocs/releases/story.php?id=5936.

ANN ARBOR, Mich.—Organic farming can yield up to three times as much food on individual farms in developing countries, as low-intensive methods on the same land—according to new findings which refute the long-standing claim that organic farming methods cannot produce enough food to feed the global population. Researchers from the University of Michigan found that in developed countries, yields were almost equal on organic and conventional farms. In developing countries, food production could double or triple using organic methods, said Ivette Perfecto, professor at U-M's School of Natural Resources and Environment, and one the study's principal investigators. Catherine Badgley, research scientist in the Museum of Paleontology, is a co-author of the paper along with several current and former graduate and undergraduate students from U-M. "My hope is that we can finally put a nail in the coffin of the idea that you can’t produce enough food through organic agriculture," Perfecto said. In addition to equal or greater yields, the authors found that those yields could be accomplished using existing quantities of organic fertilizers, without putting more farmland into production. The idea to undertake an exhaustive review of existing data about yields and nitrogen availability was fueled in a roundabout way, when Perfecto and Badgley were teaching a class about the global food system and visiting farms in Southern Michigan. "We were struck by how much food the organic farmers would produce," Perfecto said. The researchers set about compiling data from published literature to investigate the two chief objections to organic farming: low yields and lack of organically acceptable nitrogen sources. Their findings refute those key arguments, Perfecto said, and confirm that organic farming is less environmentally harmful yet can potentially produce more than enough food. This is especially good news for developing countries, where it’s sometimes impossible to deliver food from outside, so farmers must supply their own. Yields in developing countries could increase dramatically by switching to organic farming, Perfecto said.

We control distribution—even if industrial ag improves overall yields, only sustainable ag allows the world to feed itself.

Christos Vasilikiotis, November 2000. Postdoctoral fellow in Agroecology at the College of Natural Resources at UC Berkeley. “Can Organic Farming “Feed the World”?” http://www.cnr.berkeley.edu/~christos/articles/cv\_organic\_farming.html.

Our current world food production is more than sufficient to provide an adequate diet to all humans, yet more than 840 million people are suffering from hunger. Hunger is a problem of poverty, distribution, and access to food. The question then, is not “how to feed the world”, but rather, how can we develop sustainable farming methods that have the potential to help the world feed and sustain itself. Organic management practices promote soil health, water conservation and can reverse environmental degradation. The emphasis on small-scale family farms has the potential to revitalize rural areas and their economies. Counter to the widely held belief that industrial agriculture is more efficient and productive, small farms produce far more per acre than large farms. Industrial agriculture relies heavily on monocultures, the planting of a single crop throughout the farm, because they simplify management and allow the use of heavy machinery. Larger farms in the third world also tend to grow export luxury crops instead of providing staple foods to their growing population. Small farmers, especially in the Third World have integrated farming systems where they plant a variety of crops maximizing the use of their land. They are also more likely to have livestock on their farm, which provides a variety of animal products to the local economy and manure for improving soil fertility. In such farms, though the yield per acre of a single crop might be lower than a large farm, total production per acre of all the crops and various animal products is much higher than large conventional farms (Rosset, 1999). Figure 1 shows the relationship between total production per unit area to farm size in 15 countries. In all cases, the smaller farms are much more productive per unit area– 200 to 1000 percent higher – than larger ones (Rosset, 1999). Even in the United States, the smallest farms, those 27 acres or less, have more than ten times greater dollar output per acre than larger farms (US Agricultural Census, 1992). Conversion to small organic farms therefore, would lead to sizeable increases of food production worldwide. Only organic methods can help small family farms survive, increase farm productivity, repair decades of environmental damage and knit communities into smaller, more sustainable distribution networks – all leading to improved food security around the world.

## Justice Only

#### Status quo

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

An epic planetary struggle is now underway that will ultimately have more to do with the future well being of human beings on the planet than will the far noisier wars over oil, or terrorism, or political ideology. That is the battle over who will ultimately control the cultivation, production and distribution of the world’s food. This issue is surely among the most important for the ultimate survival of human communities, along with the crisis of the availability of fresh water on the planet. The question is this: Should the cycle of food production remain in the hands of small, independent farmers who are intimately engaged with the ecology of the land, familiar with the soil, local climate, local microorganisms, water resources, wild creatures, and local cultures? Throughout human history, farmers living close to the land and to their communities have fed the world and, with a few exceptions, maintained an abiding allegiance to local and regional needs. Even today, regional farming continues to feed a major- ity of the population. Or, should food production and distribution be centrally controlled by giant, globe-spanning business enterprises? They advertise that they can more efficiently “feed a hungry world,” but have no direct relationships to local lands or communities. They operate according to a hierarchy of values that places institutional profits above all other concerns. Their program is to convert millions of acres that once grew a great diversity of locally developed food crops into vast monocultures, fed by pesticides and chemical fertilizers, and requiring oil-guzzling machinery, commercial seeds, et. al. Food is then transported across continents and oceans, often destined for luxury markets within already well-fed countries. These giant corporate interests like to argue that their production methods and distribution systems are the only way to successfully grow food for the world. That has been their continuing advertising theme, hawked through billions of dollars in persuasive television and print commercials year after year. And over the past several decades, they have succeeded in shifting a high percentage of food production toward large industrialized globalized systems, run by ever larger, and ever fewer giant corporations, as we will see in this report. The recent sharp shift in direction, however, has not been based on good performance. As far as success- fully feeding the world, the reality is that nearly 900 million people go hungry each day, according to recent estimates of the United Nations Food and Development Agency (FAO). Forty million people die of hunger each year.1 Yet there is more than enough food to feed the planet. According to the FAO, current food pro- duction can supply 2,720 kilocalories (kcal) per person per day. Hunger is caused primarily from unequal distribution of food and lack of access to land to grow food. The “agricultural revolution” of recent decades has more to do with corporations’ ability to control bureaucracies and governments that determine who shall grow and distribute food, who benefits from the operating rules and who profits by them. Often the current model of “free trade” is typified by two ships passing in the night with like items being shipped across the sea—one with wheat from India going to the U.S., the other vessel containing wheat from the U.S. being shipped to India. This vast trade in food commodities, with prices controlled by large corporations, has resulted in unprecedented profits for agribusinesses and severe loss of livelihoods and incomes for farmers in both the North and the South. Despite the inherent problems of industrial food production, which we will discuss in greater detail shortly, these corporations continue to profit, grow and consolidate, mainly because they have been able to control the rules of the system. The corporations at the hub of the industrial food system enjoy extremely inti- mate relations with governments and bureaucracies. Beyond intimate, one could call their relations co- dependent. Obviously, local communities of small farmers certainly do not enjoy the kind of familial access to the halls of power that is routinely the case with giant global corporations, which are the leading campaign donors for client governments, and also the leading beneficiaries of government largesse. As will be discussed in this document, corporations have literally written the rules and components by which food production increasingly takes place: the rules of investment and credit; the standards and rules of food safety; the rules of trade between countries; the rules of ownership and patenting; et. al. These mega-corporations have lobbied for, and succeeded in, constructing a vast international bureaucratic infrastructure, an architecture of global bureaucracies that is inherently in service to the industrial agricultural model, as invented by themselves. This is especially the case with the rules of the World Trade Organization (WTO), and dozens of agreements and bureaucracies that operate within it. These will be the central focus of this document.

#### That also causes poverty

Ikerd 13 [(John, Professor Emeritus at University of Missouri) “Can Industrial Agriculture Provide Global Food Security?” conference, Rural Development of China, sponsored by the Institute for Post-Modern Development of China] AT

Those with access to capital have been able to drive those without access to capital out of business. In addition, as their farming operations expand, access to capital becomes easier and less expensive and they are able to expand even faster. Increasingly, large multinational corporations are providing the capital for industrial farming operations and are using this strategy to gain increasing control of the global food system. Having exploited most of the expansion opportunities in the so-called developed world, agribusiness corporations are now expanding into the less-developed areas of the world, forcing subsistence farmers off their farms and into urban poverty and hunger.

## Case cuts

-Cuba shifts even more

might not be T since EP is already prioritized

-Cuba stays in the squo

embargo gets removed in the squo – allows cuba to export their model

but their model is collapsing now

-some country adopts the cuba model

-generic sustainable development

ag exporters

brazil

Indonesia

Argentina

China

Thailand

South Africa

### general stuff

#### background

Butler 12 [(Rhett, founder president and editor-in-chief of mongabay.com, senior writer of the site, runs WildMadagascar.org, a site that highlights the biological richness of Madagascar and reports on environmental news for the nation, co-founder of Tropical Conservation Science and the Tropical Forest Network) “THE IMPACT OF INDUSTRIAL AGRICULTURE IN RAINFORESTS” Mongabay Jul 28] AT

Agricultural use of some rainforest land proves to be a failure because of the nutrient-deficient, acidic soils of these forests. Nevertheless, many commercial agricultural projects are still carried out on rainforest lands, although many of these revert to cattle pasture after soils are depleted. Some floodplain regions, like those of the lower Amazon (várzea), are more suitable for commercial agriculture because annual floods replenish nutrient stores. Generally forest clearers use slash-and-burn techniques to clear land, but on a much larger scale than traditional practices. Instead of burning a mere 2-10 acres (1-4 ha), agriculturalists burn hundreds to thousands of hectares after felling a tract of forest and leaving it to dry. Burning releases nutrients locked up in vegetation and produces a layer of nutrient-rich material above the otherwise poor soil. The cleared area is quickly planted and supports vigorous growth for a few years, after which the nutrient stock is depleted and large amounts of fertilizer are required to keep the operation viable. Fertilizer may be washed into local streams, affecting fish and aquatic life. When the use of fertilizer is deemed no longer efficient, the land is abandoned and allowed to revert to scrub. Drought-resistant grasses may move in or cattle ranchers may plant imported African grasses for cattle grazing. The land is now only marginally productive and a limited number of cattle can subsist in the area. When the land is suitable for agriculture, generally large single cash crops like rice, citrus fruits, oil palms, coffee, coca, opium, tea, soybeans, cacao, rubber, and bananas are cultivated. Some of these crops are better adapted to such conditions and last longer on cleared forest lands.

### bioD

#### Pushout of small farmers

Butler 12 [(Rhett, founder president and editor-in-chief of mongabay.com, senior writer of the site, runs WildMadagascar.org, a site that highlights the biological richness of Madagascar and reports on environmental news for the nation, co-founder of Tropical Conservation Science and the Tropical Forest Network) “THE IMPACT OF INDUSTRIAL AGRICULTURE IN RAINFORESTS” Mongabay Jul 28] AT

In some parts of the world, large-scale commercial agriculture takes up the majority of the productive floodplain and volcanic soils, while leaving smaller farmers little choice but to cut farmland from the rainforest. The ownership of these large commercial farms is concentrated in the hands of a wealthy minority, who may benefit from tax incentives to leave some of their land fallow and not fully employed at any given time. These large farm businesses generally do not employ large numbers of locals, though when they do, workers are used seasonally for low wages. In recent years, grain production in Brazil and other Latin American countries has widely accelerated. However, most of the money ends up in the hands of a few large landowners who, in more marginal areas, have relied on subsidies to survive the harsh soil and climate conditions. Only through these handouts have these landowners been able to turn a profit.

### Unsustainable

#### Industrial agriculture is unsustainable – fossil fuels

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The basic flaw in this logic is that industrializing global agriculture – meaning replacing the remaining small, diversified farms with large, specialized farms – is not the only means of increasing global food production. In fact, with greater scarcity and rising costs of fossil energy and the progression of global climate change, industrial agriculture is becoming less productive and may not even survive the twenty-first century. As we have seen in recent years, the global economy has no nationality, no sense of social responsibility, or concern for the future of humanity. Nations that depend on industrial agriculture for their food security face a future of growing dependence on a few large multi-national food corporations that have no allegiance to anything other than maximum profit and growth. The blind faith in the future of industrial agriculture is based on its record of increasing productivity over the past 50 to 60 years. Admittedly, yields of crops per acre or hectare of farmland production of meat, milk, and eggs per bushel or ton of feed have increased during this period. However, virtually all of these increases have been linked directly or indirectly to an increased reliance on abundant and inexpensive fossil energy. Cheap nitrogen fertilizers were readily available because of an abundance of natural gas. Climate-controlled buildings for livestock were economically feasible because of low-cost fuel for heating and ventilation. Fossil fuels provided energy not only for traction but also for manufacturing of machinery. Deep-well irrigation likewise depends on low cost energy to pump and distribute water. Most pesticides are also fossil-energy based materials. Industrial agriculture is inherently fossil-energy dependent. In the United States, for example, approximately 10 calories of fossil energy is required for each calorie of food energy produced.[1] About two-thirds of this total is accounted for by food processing, manufacturing, transportation, packaging and other processes of the industrial food system. But, even at the farm level, industrial agriculture requires about three kcals of fossil energy per kcal of food produced. In addition, industrial agriculture is impractical, if not impossible, without an industrial system of processing and distribution. Industrial agriculture depends on a fossil energy dependent food system. Energy experts differ on their estimates of how much recoverable fossil energy is left to be extracted from the earth. Some experts claim that most economically recoverable fossil energy reserves will be depleted within fifty years while other believe there is enough fossil energy for another 100 to 150 years. However, there is no disagreement that the remaining reserves of fossil energy will be more difficult and costly to extract, as we are seeing with the “fracking” process required to extract shale gas and the costs and risks of deep-sea oil drilling. Beyond some point in each extraction process production will peak; there will be less fossil energy available each year thereafter. Each time demand increases relative to supplies, prices of fossil energy will rise – and eventually will rise dramatically. An agriculture that is dependent on fossil energy quite simply is not sustainable. With increases in fossil energy demand of 2.5% per year, which is typical of recent years, total fossil energy demand would double every 30 years. This means twice as much fossil energy would be needed by 2045, four times as much by 2075, and eight times as much by 2105. Renewable energy from wind, water, passive solar, and photovoltaic cells eventually must replace fossil energy in agriculture as well as elsewhere in the economy. But, useful energy from renewable sources will be less abundant and more expensive than the fossil energy of the past century. The era of abundant, inexpensive energy is over.

#### Industrial ag unsustainable – fossil fuels, water, and fertilizer

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The prevailing agricultural ideology seems to be that “industrial agriculture” – meaning large, specialized, mechanized farms – will be necessary to meet the food needs of a growing global population. The logic or reasoning supporting this ideology is: Global population is destined to grow from the current seven billion to at least nine billion people by the middle of this century. More people obviously will require more food. And, industrial agriculture is the only logical means of increasing global food production. The basic flaw in this logic is that industrializing global agriculture – meaning replacing the remaining small, diversified farms with large, specialized farms – is not the only means of increasing global food production. In fact, with greater scarcity and rising costs of fossil energy and the progression of global climate change, industrial agriculture is becoming less productive and may not even survive the twenty-first century. As we have seen in recent years, the global economy has no nationality, no sense of social responsibility, or concern for the future of humanity. Nations that depend on industrial agriculture for their food security face a future of growing dependence on a few large multi-national food corporations that have no allegiance to anything other than maximum profit and growth. The blind faith in the future of industrial agriculture is based on its record of increasing productivity over the past 50 to 60 years. Admittedly, yields of crops per acre or hectare of farmland production of meat, milk, and eggs per bushel or ton of feed have increased during this period. However, virtually all of these increases have been linked directly or indirectly to an increased reliance on abundant and inexpensive fossil energy. Cheap nitrogen fertilizers were readily available because of an abundance of natural gas. 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In addition, industrial agriculture places similarly unsustainable demands on fossil water, or slow-recharging aquifers, for irrigation, half of which has already been depleted by some estimates.[2],[3] Other estimates indicate that the earth's mineable phosphorus reserves could be depleted in 50–100 years, with a peak occurring around 2030.[4] In addition, industrial agriculture is destroying the natural productivity of soils through erosion, salinization, and agrochemical contamination. Fertilizers and agricultural pesticides also are major contributors to pollution of groundwater, streams, and estuaries. Industrial agriculture is a major contributor to global climate change, and the related weather instability will be a major challenge to global food security in the future.[5] In summary, industrial agriculture depletes the natural resource base that supports its productivity and pollutes the natural environment that sustains the health of humanity. Industrial agriculture cannot possibly provide long-run global food security. Contrary to popular belief, the failure of industrial agriculture to provide food security is readily apparent in the United States. In fact, a larger percentage of Americans are “food insecure” today than during the 1960s, prior to the final phases of agricultural industrialization.[6] More than 20% of American children today live in food insecure homes. Food security means that everyone must have enough wholesome and nutritious food to support healthy, active lifestyles. Food insecurity takes on a different form in nations with industrial food economics. The food insecure people in these nations can often get enough food to satisfy their need for calories or energy but do not get enough nutritious food to meet their nutritional needs for healthy, active lifestyles. Diet related illnesses are rampant in America, including obesity and related diseases such as diabetes, hypertension, heart failure, and various types of cancers. These illnesses are prevalent in lower-income, food-insecure homes. Obesity related illnesses alone are projected to claim about one-in-five dollars spent for health care in America by 2020 – erasing virtually all of the gains made in improving public health over the past several decades.[7] A growing body of scientific evidence links the industrialization of agriculture to foods that are rich in calories and poor in essential nutrients, which have helped fuel the epidemic of obesity and other diet-related illnesses in America.[8] The rising costs of diet-related health care have paralleled the industrialization of agriculture. Industrial agriculture in America has produced an abundance of cheap food, but it has failed to provide food security. Agricultural industrialization has also failed to increase food security in the so-called developing nations. A larger percentage of people in the world are hungry today than were hungry prior to the Green Revolution. The development experts attribute the persistent increases in global hunger to increases in population made possible by increased food production. However, many of those living in developing nations often have a very different view. In the words of Stacia and Kristof Nordin who have worked for years with farmers in Malawi, Africa: Here at the Institute, we've reviewed the data from every country for which it's available, comparing the productivity of smaller farms versus larger farms. By productivity, I mean the total output of agricultural products per unit area -- per acre or hectare. For every country for which data is available, smaller farms are anywhere from 200 to 1,000 percent more productive per unit area. The myth of the greater productivity of larger farms stems in part from the confusing use of the term "yield" to measure productivity. Yield is how much of a single crop you can get per unit area -- for example, bushels of soy beans per acre. That's a measure that's only relevant to monocultures. A monoculture is when a single crop is grown in a field, rather than the kind of mixtures of crops and animals that small farmers have. When you grow one crop all by itself, you may get a lot of that one crop, but you're not using the ecological space -- the land and water very efficiently. Large farmers generally have monocultures because they are easier to fully mechanize.[12] Miguel Altieri of the University of California, who has spent his entire professional working with small farmers, elaborates on the productivity advantage for small farms.[13] These diversified farming systems in which the small-scale farmer produces grains, fruits, vegetables, fodder, and animal products in the same field or garden out-produce the yield per unit of single crops such as corn grown alone on large-scale farms. A large farm may produce more corn per hectare than a small farm in which the corn is grown as part of a polyculture that also includes beans, squash, potatoes, and fodder. But, productivity in terms of harvestable products per unit area of polycultures developed by smallholders is higher than under a single crop with the same level of management. Yield advantages can range from 20 percent to 60 percent, because polycultures reduce losses due to weeds (by occupying space that weeds might otherwise occupy), insects, and diseases (because of the presence of multiple species), and make more efficient use of the available resources of water, light, and nutrients.[14] By managing fewer resources more intensively, small farmers are able to make more profit per unit of output, and thus, make more total profits—even if production of each commodity is less.[15] In overall output, the diversified farm produces much more food. In the United States the smallest two-hectare farms produced $15,104 per hectare and netted about $2,902 per hectare. The largest farms, averaging 15,581 hectares, yielded $249 per hectare and netted about $52 per hectare. Even when single crops are produced in organic rotations, organic methods are found to be competitive with conventional monocropping systems. One 15-year study in the United States found organic farming to have comparable yields of both products and profits. The study showed that yields of organic corn were identical to yields of corn grown with fertilizers and pesticides, while soil quality in the organic fields improved dramatically.[16] If small-scale, diversified, organic production is more productive and more profitable on a per acre or per hectare basis, why have farmers in the United States and other so-called developed countries adopted industrial agriculture? The answer is that industrial farming strategies allow “each farmer” to manage “more acres or hectares,” or in the case of livestock to produce more livestock or poultry. A 5,000 acre farm in that nets $50 per acre in profits gives the farmer/owner a net income of $250,000. A 3 acre farm that net $15,000 in profits per acre gives the farmer/owner a net income of only $45,000. Large industrial farms don’t need to yield more production or profit per acre or per hectare to yield more net income for farm managers or owners because they can farm more land using industrial methods. In addition, large industrial farming operations can afford to keep producing at lower margins of profit per acre, per bushel, or head because they produce more bushels of crop or head of livestock. Thus, they have able to produce at commodity prices low enough for long enough to drive more productive smaller, diversified, organic farmers out of business. The limiting factor of industrial agriculture has been access to capital, rather than ability to work, management skills, or basic agricultural knowledge.

#### Organics work

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Even if small farmers are more productive than industrial farmers and are currently producing most of the global food supply, the question remains: Can small, diversified, organic farmers provide food security for a growing global population? Again, the scientific evidence clearly indicated that small farms are the best hope for providing food security for the nine-billion-plus people expected by 2050 and beyond. If small farms were able to double their total production they could increase global food production by 40%, even without more production from industrial farms. A doubling of the current 70% of food currently produced by small farms would result in 170% of current production, enough to meet expected global food needs of 2050. If current industrial farming operations are converted to more intensive farming methods, by dividing into smaller farms, they could easily double their production per acre or hectare as well, resulting is a 100% increase in global food production. In addition, the need for fossil energy for food production would be greatly reduced, scarcity of water and other natural resources would be less restricting of food productive, nature could accommodate agricultural wastes, and soil productivity could be restored, sequestering large quantities of greenhouse gasses in the process. All of these changes would move humanity closer to long-run, sustainable food security. All of these developments needed to ensure the future of humanity are possible and even feasible with existing agricultural knowledge and technologies. Jules Pretty, Director of the Centre for Environment and Society at the University of Essex in the UK, lists research projects pointing to potentials for increasing yields on small, diversified, organic farms. He highlights: 223,000 farmers in Brazil using green manures and cover crops of legumes and livestock integration have doubled yields of maize and wheat; 45,000 farmers in Guatemala and Honduras have used regenerative technologies to triple maize yields; 300,000 farmers in southern and western India farming in dryland conditions, and now using a range of water and soil management technologies, have tripled sorghum and millet yields; 200,000 farmers across Kenya who participated in sustainable agriculture programs have more than doubled their maize yields; 100,000 small coffee farmers in Mexico who have adopted fully organic production methods, have increased yields by half. [17] These are but a few examples that have been included in more comprehensive studies of the potential to increase the productivity of intensively-managed, small-scale farms by relying on diversified, organic, sustainable farming methods. For example, a 2008 United Nations study of farming methods in 24 African countries found that organic or near-organic farming resulted in yield increases of more than 100 percent.[18] Another United Nations supported study entitled Agriculture at a Crossroads, was compiled by 400 international experts. The report concluded that agricultural production systems must change radically to meet future demand. It called for governments to pay more attention to small-scale farmers and sustainable farming practices.[19] As Altieri summarizes the ecological and social benefits that can be achieved while yields are increases: A variety of agroecological and participatory approaches in many countries show very positive outcomes even under adverse environmental conditions. Potentials include: raising cereal yields from 50 to 200 percent, increasing stability of production through diversification, improving diets and income, and contributing to national food security (and even to exports) and conservation of the natural resource base and biodiversity.[20] The experts challenged the myth that industrial agriculture is more efficient in any respects other than reducing agricultural employment and maximizing economic returns for those who have the capital to invest in industrial farming operation. The narrowly-defined employment and economic efficiencies of large scale production are not necessary for, and are not capable of, providing global food security or long run sustainability. The food security experts called for a shift in global agricultural development programs to focus on supporting a multifunctional agriculture capable of providing global food security while protecting the natural environment, preserving rural communities, and honoring indigenous knowledge and cultures.

### Warming

#### Soil carbons

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Carbon dioxide emissions are largely caused by the loss of soil carbon to the atmosphere. Modern industrial agriculture massively contributes to this by practices such as drainage of wetlands, deep plow- ing that exposes the soil to the elements, use of heavy machinery that compacts the soil, use of fertilizers and pesticides that destroy soil structure, overgrazing leading to desertification, and the practice of grow- ing monocrops on a large scale.

### Water shortages

#### Water – industrial ag needs more of it

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Modern irrigation is especially energy intensive. Farmer-saved seeds that have been developed and selected over millennia to succeed in specific local climates and geological configurations have longer roots that can dig deep into the soil to find sources of moisture that the short-rooted industrial commer- cial high yielding seeds cannot utilize. For example, in industrial corn production, it is sometimes neces- sary to pump out water from a depth of more than thirty meters. Such pumped irrigation requires more than three times as much fossil fuel energy as rain-fed corn cultivation. Commercial high yielding hybrid seed varieties, and genetically modified seeds, require much more water than traditional crops, just as they require more chemicals than non-commercial seeds. This increases dependence on perennially irrigated crops at a time when the planet’s fresh water supply is diminishing.

#### Consumes and pollutes water supply

Cassuto and Saville 12 [(David, professor at Pace Law School and the Director of the Brazil-American Institute for Law and Environment, Visiting Professor of Law at the Federal University of Bahia, Brazil; and Sarah, J.D. Candidate, Class of 2012, at Pace Law School) “HOT, CROWDED, AND LEGAL: A LOOK AT INDUSTRIAL AGRICULTURE IN THE UNITED STATES AND BRAZIL” ANIMAL LAW Vol. 18:2] AT

The massive profit margins posted by industrial producers do not account for these externalized environmental and social costs, or the subsidies.115 Water consumption alone exemplifies the cost/subsidy cycle. For instance, it takes 23 gallons of water to produce one pound of tomatoes, but 5,214 gallons to produce one pound of beef.116 Further, contaminants from agribusiness account for more water pollution than all other industrial and municipal water sources combined.117 In short, industrial agriculture consumes more water than anything else and pollutes what it does not use.118

#### Water

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In addition, industrial agriculture places similarly unsustainable demands on fossil water, or slow-recharging aquifers, for irrigation, half of which has already been depleted by some estimates.[2],[3] Other estimates indicate that the earth's mineable phosphorus reserves could be depleted in 50–100 years, with a peak occurring around 2030.[4 ] In addition, industrial agriculture is destroying the natural productivity of soils through erosion, salinization, and agrochemical contamination. Fertilizers and agricultural pesticides also are major contributors to pollution of groundwater, streams, and estuaries. Industrial agriculture is a major contributor to global climate change, and the related weather instability will be a major challenge to global food security in the future.[5] In summary, industrial agriculture depletes the natural resource base that supports its productivity and pollutes the natural environment that sustains the health of humanity. Industrial agriculture cannot possibly provide long-run global food security.

### Disease

#### Low impact diseases

Cassuto and Saville 12 [(David, professor at Pace Law School and the Director of the Brazil-American Institute for Law and Environment, Visiting Professor of Law at the Federal University of Bahia, Brazil; and Sarah, J.D. Candidate, Class of 2012, at Pace Law School) “HOT, CROWDED, AND LEGAL: A LOOK AT INDUSTRIAL AGRICULTURE IN THE UNITED STATES AND BRAZIL” ANIMAL LAW Vol. 18:2] AT

3. Human Health Risks Industrial agriculture also creates a health risk for agricultural workers and people in surrounding communities.63 One study estimates that as many as 70% of people working on confined animal feed lots (CAFOs) suffer from bronchitis.64 Some of the gases produced in industrial animal agriculture can be fatal in high concentrations, and there have been at least eleven work- related deaths by asphyxiation in sewage lagoons.65 Emissions from hog farms have also resulted in flu-like symptoms, brain damage, and death in as many as nineteen persons.66 Because it is produced in such large volumes, animal waste is also expensive to transport, hard to store,67 and quite toxic; the result is an ongoing disposal problem.68

### Justice/kritikal

#### Women

CBTF 8 [(CBTF UNEP-UNCTAD Capacity Building Task Force on Trade, Environment and Development) “Organic Agriculture and Food Security in Africa” United Nations Conference on Trade and Development United Nations Environment Programme, 2008] AT

Organic agriculture has also been shown to enable new and different groups in society to get involved in agricultural trade. Women in East Aﬁica are very often not able to access synthetic agro-inputs or the credit to buy them. This has historically put them at a disadvantage in agriculture. Organic agriculture however negates the need to purchase agro-inputs and so women can farm on an equal level, thus empowering them. Selling surpluses of produce at local markets also increases women’s income which again leads to improved health particularly for women and children.

#### Indigenous peoples

Cassuto and Saville 12 [(David, professor at Pace Law School and the Director of the Brazil-American Institute for Law and Environment, Visiting Professor of Law at the Federal University of Bahia, Brazil; and Sarah, J.D. Candidate, Class of 2012, at Pace Law School) “HOT, CROWDED, AND LEGAL: A LOOK AT INDUSTRIAL AGRICULTURE IN THE UNITED STATES AND BRAZIL” ANIMAL LAW Vol. 18:2] AT

The spread of industrial agriculture also threatens indigenous cultures.82 For example, members of communities in the Cerrado grasslands are forced to move as their traditional homelands are converted to pasture.83 Amazonian indigenous cultures also face threats from industrial agriculture. A vast majority of land federally demarcated in Brazil for indigenous cultures is located in the Amazon.84 While this land is protected from deforestation, the correlating loss of biodiversity has long-lasting negative consequences on their religious, cultural, and everyday practices.85

### Poverty Ad

#### Kills small farms – price fluctuations

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

The WTO, NAFTA, and other agreements, along with structural adjustment policies (SAPs), have essen- tially gutted, and in some cases outlawed, many pricing and supply mechanisms that enabled farmers to receive a decent price for their commodities. Supply management boards provide a mechanism for farmers to sell to marketing boards which negotiate a collective price with domestic and foreign buyers. Supply is also regulated by these boards. Without such mechanisms, farmers must independently negotiate commodity prices with large food pro- cessing and distribution companies, so their bargaining power is insignificant. Stable prices and predictable demand are essential to the viability of small-scale agricultural produc- ers. In the last two decades, commodity prices have wildly fluctuated at historic levels 12 (this trend corre- lates to implementation of WTO rules and market domination by fewer corporations). Unpredictable commodity prices, market speculation, and steadily increasing costs have overwhelmed the capacity of millions of farmers, in both the North and the South. Consider the plight of Mexican corn growers. Less than two years after NAFTA went into effect, Mexican domestic corn prices fell by 48 percent because a flood of cheap, subsidized U.S. corn entered the country.13 Before NAFTA, government agencies set stable prices for Mexico’s corn farmers. However, NAFTA outlawed such price regulations. Without such price supports, thousands of farmers have been forced to sell their lands. (As noted earlier in this report, the increased migration of Mexican farmers to the U.S. correlates to the crash in Mexican corn prices.)

#### Immigration

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

Between 1990 and 2005, the number of migrants from Mexico and Central America living in the U.S. without authorization spiked from 2 million to an estimated 6.2 million. Many of these migrants could be called “NAFTA refugees.” The North American Free Trade Agreement (NAFTA), which went into effect in 1994, lifted barriers to “free” agricultural trade between North and South, with dire consequences. As part of the condition for joining NAFTA, Mexico was required to drastically change its Constitution and abandon the traditional ejido system of communal land and resource ownership. This is the system created after the Mexican Revolution of the early 20th century that made traditional farming in Mexico productive and viable. Mexico was also forced to dismantle a system that had provided a guaranteed floor price for corn for Mexican farmers, which had sustained over 3 million corn producers. As a result of NAFTA, Mexican farmers suddenly found themselves competing with an influx of cheap agricultural commodities produced by large-scale, heavily subsidized U.S. producers. Corn imports from the North grew 17-fold between 1993 and 2001 and accounted for 25 percent of Mexican corn consumption. This compared to a pre-NAFTA figure of 2 percent.5 Within a year of NAFTA’s passage, Mexican production of corn and other basic grains fell by 50 percent, and millions of peasant farmers lost a significant source of their incomes.6 Facing dire poverty in the Mexican countryside, millions of farmers migrated off their lands and made the wrenching decision to leave behind families and communities and head northward. Once in the United States, these migrants often found jobs in the fields, performing backbreaking work for poor pay and with- out basic rights. Thousands of others toil in industrial food processing plants, where conditions today resemble those depicted in The Jungle by Upton Sinclair at the end of the 19th century. Despite NAFTA’s record, the U.S. Congress approved a similar agreement with Central America in 2005 that is expected to have similar devastating effects on small farmers in those countries. Many of them will also likely attempt to seek economic opportunities in the United States. Similar stories could be told throughout the developing world; farmers everywhere are vulnerable to import competition, not only because of free trade agreements but also due to World Bank- and IMF-promoted cuts to all types of supports for small-scale agriculture, as this report will discuss.

#### Corporatism and poverty

Ikerd 13 [(John, Professor Emeritus at University of Missouri) “Can Industrial Agriculture Provide Global Food Security?” conference, Rural Development of China, sponsored by the Institute for Post-Modern Development of China] AT

Those with access to capital have been able to drive those without access to capital out of business. In addition, as their farming operations expand, access to capital becomes easier and less expensive and they are able to expand even faster. Increasingly, large multinational corporations are providing the capital for industrial farming operations and are using this strategy to gain increasing control of the global food system. Having exploited most of the expansion opportunities in the so-called developed world, agribusiness corporations are now expanding into the less-developed areas of the world, forcing subsistence farmers off their farms and into urban poverty and hunger.

#### Brazil – poverty and landlessness

Leaning [(Jon) “Advancing Food Security through Organic Agriculture in Brazil” The General Board of Global Ministries is the global mission agency of The United Methodist Church, its annual conferences, missionary conferences, and local congregation] AT

Despite Brazil's sparkling new reputation of growth, the nation harbors some of the most destitute regions in Latin America. In the Northeast, ecologically devastated states of Pernambuco and Maranhão in particular are notorious for having the continent's highest rates of hunger, poverty, malnutrition, and illiteracy. The gap between rich and poor is dramatic. Centuries of exploitation by large landowners and now corporate agribusiness have robbed the land of its fertility and reduced much of the rural population to landless, migrant laborers scratching together a miserable living. Yet out of crisis arise bold solutions. Remarkably, seeds of great hope for the rural poor are being sown in Brazil's northeast. Vibrant, sustainable solutions to hunger and poverty are spreading quickly through the efforts of our partners innovative examples that could prove highly successful and that could be replicated elsewhere around the globe. The Landless Workers Movement (MST), a long time Grassroots International partner, has helped to spur astonishing agrarian land reform, securing rights to land for over 350,000 formerly landless families. Building on this historic achievement, the MST also helps the families quickly transform the land and their livelihoods to overcome hunger and poverty. These historically marginalized families are courageously building from the ground up vital, self-sustaining communities on previously inaccessible land. With technical assistance from this Grassroots International project, they are creating effective models of agroecological farming locally-based, sustainable and organic agriculture that are providing healthy and diverse food, creating new sources of income, and reviving previously decimated rural lands and communities. This project: 1) strengthens local organic, locally based farming initiatives through the organization of annual yearlong training-of-trainers at the MST's National Agroecology Training School, and 2) disseminates these sustainable agriculture practices to formerly landless farmers in the Northeastern states of Maranhão and Pernambuco through demonstration projects. In direct contrast to the dominant industrial model of agriculture large scale industrial agriculture through mono-cultures using toxic agrochemicals at the expense of the environment and farmer's health this project advances a much more sustainable, planet-friendly alternative. The agroecological model prioritizes the use of local seed varieties, diversification of crops, recovering and building local knowledge, and fostering local control and consumption of food.

### Solvency

#### Soil reclamation

Ho 13 [(Mae-Wan, Ph. D. in Biochemistry, Postdoctoral Fellow in Biochemical Genetics, in the University of California in San Diego, Senior Research Fellow in Queen Elizabeth College, Lecturer in Genetics and Reader in Biology in Open University, Visiting Reader in Biology at the Open University, and Visiting Professor of Biophysics in Catania University, Sicily) “Paradigm Shift Urgently Needed In Agriculture – UN Agencies Call for an End to Industrial Agriculture & Food System” Permaculture Research Institute Sept 18] AT

The first step is to use legumes to fix atmospheric nitrogen. Nitrogen-fixing species such as Sesbania seban, Desmodium intorum and D. uncinatum are planted to provide green manure for cereal crops as well as fodder for livestock. These plants can control root parasites of cereal crops such as Striga hermonthica by triggering their ‘suicide germination’ before the cereals are planted. Desmodium spp also act as repellent for insects pests of cereals like the stem borers Buseola fusca and Chila partellus. Similarly, planting Napier grass (Pennisetum purpuretum) as an intercrop or around small fields attract the insect pests away from the crops. The next step is to integrate trees within the farming systems. Cash crops such as coffee, cocoa and rubber are increasingly grown by small holders in various combinations; also bananas with fruit trees like mango and avocado and local indigenous trees that produce marketable products. Another innovation in the tropics, especially South-East Asia, led by farmers who used to practice shifting agriculture, is to plant a wide variety of commercially important tree species among food crops species on the valley slopes. These trees become productive successively in later years, creating a continuous supply of marketable produce such as cinnamon, tung nut, damar (edible gum), duku (edible fruit) and rubber for several decades, often ending in a timber crop. Apart from generating income, the trees enhance biodiversity and promote agro-ecosystem functions that monoculture crops cannot provide: protecting sloping land from erosion, improving water infiltration into the soil, sequestering carbon and mitigating climate change (see above). In a further initiative over the past 20 years, agroforesters have taken this strategy to a higher level by starting to domesticate some of the very wide range of forest tree species that have been the source of food and non-food products. Well-known horticulture techniques of vegetative propagation have been used to develop cultivars within local communities rather than in a research station, thus ensuring that farmers participating in the projects who have the indigenous local knowledge are the instant beneficiaries of the domestication. As a result, highly productive cultivars yielding good quality produce required by market are rapidly and easily obtained. As the multiplication process is done vegetatively from mature tissues that can readily flower and fruit, trees become productive in 2-3 years. A tree domestication project in Cameroon started 23 years ago grew from four villages and a small number of farmers to over 450 villages with 7 500 farmers. Benefits such as income started within 5 years. The third step, says Leakey [18], is to further expand the commercialization of the new tree crops, to create business opportunities and employment. Rehabilitation of degraded land has the potential to double the amount of agricultural land globally. As pointed out by David Pimental and Michael Burgess at Cornell University, New York [19], decades of unsustainable industrial agricultural practices have resulted in massive loss of top soil and land degradation. Worldwide, the 1.5 billion ha of land now under cultivation are almost equal in area to the amount that has been abandoned by humans since farming began.

### A2 Dualism

#### Only sustainable agriculture olves dualism

Barker 7 [(Debbie, international director for the Center for Food Safety, public policy institute, and director of the International Forum on Globalization, think tank that analyses economic globalization) “The Rise and Predictable Fall of Globalized Industrial Agriculture” a report from the international forum on globalization] AT

GROWING FOOD ONCE EXPRESSED a “personal” relationship between human beings, wildlife and the earth. Successful farming was based on generations of accumulated knowledge about place: climate, land, water, soil and the organisms within it; mixing and rotating crops, seed saving, breeding, and recy- cling organic matter. Growing food was an intimate process; it involved farmer, land, and community, with the goal of sustaining that life-giving exchange in perpetuity. At the heart of the matter: a deep love of the land.